

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925	
Oct. 1	Maj.-Gen. Sir Sefton Brancker, K.C.B., A.F.C. "The Technical Lesson of Five Years of Air Transport," before R.Ae.S.
Oct. 8	Aero Golfing Soc. Autumn Meeting, Walton Heath.
Oct. 10	Pulitzer Trophy, Long Island, U.S.A.
Oct. 15	Maj. C. K. Cochran-Patrick, D.S.O., M.C. "Aircraft Survey in Burma," before R.Ae.S.
Oct. 24-29	Schneider Cup Race, Baltimore, U.S.A.
Oct. 29	Mr. W. L. Cowley. "Aircraft Transport Economy," before R.Ae.S.
Nov. 4	Group-Capt. W. F. MacNeece. "The General Principles of Air Defence," before Royal United Service Institution.
Nov. 10	Wing-Com. T. R. Cave-Browne-Cave, C.B.E., F.R.Ae.S. "The Evaporative Cooling of Aero Engines and Condensation of their Exhaust Gas," before R.Ae.S.
Nov. 12	Mr. H. B. Howard, A.F.R.Ae.S. "Some Problems in Aeroplane Structural Design," before R.Ae.S.

EDITORIAL COMMENT.



THE subject of three-engined aeroplanes is one which is very much to the fore at the present moment, and much has been spoken and written on the subject during the last year or so. Up to the present time it has not been possible, however, to do much more than theorise, since no three-engined machines have been in regular use in this country sufficiently long to enable any data to be collected. In a series of articles in FLIGHT, Mr. M. L. Bramson has endeavoured to show that with the three-engined arrangement, and assuming the machine to be capable of flying on any two with full load, the risk of forced landings should be practically negligible. Somewhat similar results were arrived at by Mr. Handley Page and Mr. Savage in a paper read before the International Air Congress in London, at which also Mr. J. D. North produced estimates which showed that, in theory at any rate, the three-engined machine having a power surplus of a little more than one-third of the total should, to all intents and purposes, be immune from the necessity of having to make a forced landing.

It is now some considerable time since Handley Page, Ltd., produced three-engined aeroplanes for use in the Belgian Congo, and the flight from Brussels to Kinchasa, made in one of those machines, will still be remembered. Since that time something like six Belgian-built Handley Page machines, each fitted with one Rolls-Royce "Eagle" and two Siddeley "Pumas," have been in regular use in the Belgian Congo, and to the best of our knowledge not a single forced landing has had to be made.

In Germany, the Junkers works have recently produced a three-engined monoplane, but this type has scarcely been in existence sufficiently long to enable one to form any definite idea of the advantages of the type. One of these machines, it may be remembered, visited Croydon recently carrying German Reparation bonds to the value of several million pounds sterling.

In a paper which he is to read before the Royal Aeronautical Society tonight, October 1, Air Vice-Marshall Sir W. Sefton Brancker, Director of Civil Aviation, will refer at considerable length to the three-engined machine, and will make some very interesting statements concerning the various types of machines of this class which are coming along for use by Imperial Airways. The subject is, therefore, one which seems bound to assume very considerable importance during the next few months, and for this reason we are pleased to be able to publish this week a detailed illustrated description of a new Handley Page three-engined machine which has just been completed and which is now undergoing preliminary flying tests at Cricklewood.

It is generally admitted that the three-engined type of aeroplane, with sufficient power reserve to allow of flying on any two engines, is not likely to be quite so efficient, from the point of view of pay load per horse-power, as the single-engined machine with the same percentage of surplus power. Although probably this objection may hold good as regards the three-engined machines hitherto produced, we are by no means convinced that this will necessarily always be so. Even granting, for the purpose of argument, that the three-engined type will always suffer from this disadvantage, there are certain factors entering into the problem which assist very materially to improve the position of the three-engined machine.

The added safety is, of course, worth paying something for, but even on a commercial basis the three-engined machine should not by any means be as inferior as it would appear to be when judged solely on the basis of paying load per horse-power. To begin with, with a three-engined machine, assuming that practice proved it to be as free from forced landings as theoretical considerations would seem to indicate, it should be possible to fly under conditions when it would be risky to leave the ground with a single-engined machine. This would mean that not only a larger percentage of "flights commenced" would be completed, but that a much larger percentage of "flights scheduled" could be carried out. It has hitherto been the official practice in giving statistics relating to commercial flying to judge the reliability of a service according to the number of "flights finished" out of the number of "flights commenced." This, of course, is a perfectly meaningless basis, since if carried to absurdity, if no flight is commenced except under ideal conditions, there is a very good chance of attaining 100 per cent. efficiency, although the percentage of "flights completed" in proportion to the number of "flights scheduled" might be ridiculously low. Theoretically, it would appear that the three-engined machine should be able to attain 100 per cent. efficiency in the matter of "flights commenced," and probably 80 or 85 per cent. efficiency as regards the number of "flights scheduled." Such regularity and reliability should soon secure extra passenger and goods traffic to help in a great measure in making up for the slightly lower efficiency of the three-engined type.

Then there is the very important item of insurance.

It would seem likely that, after the insurance companies have been watching carefully the statistics of the three-engined machine and find the liability to forced landings, and consequently to damage, very much smaller, they would be willing to reduce very materially the insurance fees for this type of machine. These factors (and there are several which could be adduced in favour of the three-engined type), tend to show that, on the whole, the lower efficiency of the three-engined type when judged solely on the paying load per horse-power basis, is, or may be, a good deal less serious when the question of what one might call over-all reliability and efficiency is considered.

Then there is the question of developing regular night flying, for which the three-engined machine would appear to be a necessity. The advantages of night flying are not, perhaps, so apparent in the case of the London-Paris air route, for instance, but as length of routes increase, so night flying becomes increasingly important, and for very long routes the ability to fly at night with the same regularity as by day virtually means nearly doubling the overall speed of the service, or, looked upon in another way, machines need only half the cruising speed of those used on a service operating by day only. If thus machines with a cruising speed of, for instance, 70 m.p.h., could be used on a day-and-night service, they should be equivalent, as regards overall speed, to a day-flying machine cruising at, for instance, 110 m.p.h., and there is thus the possibility of greatly increasing the paying load per horse-power. The subject is too large to go into here, but there can be no doubt that the three-engined type opens up new possibilities, and the performance of the "Hampstead" will therefore be watched with more than ordinary interest.

"Avanti-Savioa"

One more has been added to the long and repeatedly growing list of magnificent flights by Marchese de Pinedo reaching his goal—Tokyo—after having covered about 20,000 miles in his flight from Rome.

The flight has once more demonstrated the suitability of the flying-boat for journeys such as the one undertaken by the Italian aviators, although it must be admitted that, for certain stretches of the route, the Marchese de Pinedo must have had to place very considerable faith in his engine, such as, for instance, when he crossed India from Bombay to Cocanada.

On the whole the Marchese de Pinedo's flight has been reasonably free from mechanical troubles, and concerning the machine itself, so far as it is possible to ascertain, this has given no trouble of any kind, a fact which reflects very great credit on the Savoia designers and constructors. The tour is one of which not only the Marchese de Pinedo himself, but the Savoia and the Lorraine-Dietrich Companies may be justly proud, and, on behalf of ourselves and our readers, we extend to the Italian nation our very sincere congratulations on the successful completion of a most meritorious flight.

Irish Free State Air Force Flying Accident

MAJOR THOMAS MALONEY, of the Free State Air Force, was killed on September 22 as a result of an accident to his aeroplane during command manoeuvres. It appears that two aeroplanes were engaged in operations over the "enemy" lines two miles from Kildare when two other aircraft rose to attack

them. In trying to escape, Major Maloney's machine crashed into a tree. The officer was fatally injured, and the observer, Sergt. Casey, had his legs broken. Maj. Maloney, a native of Limerick, served with the Yorkshire Regiment during the war, and also joined the Royal Air Force, before eventually joining the Free State Air Force.

THE NEW HANDLEY PAGE W.9 "HAMPSTEAD"

Three Armstrong-Siddeley "Jaguar" Engines

ALTHOUGH very similar in general outline to the Handley Page W.8F, the new Handley Page biplane, which will be commencing its flying tests at Cricklewood this week, is really a totally different type of machine in that its power reserve, and consequently performance, are considerably greater than those of the W.8F, of which the W.9, or "Hampstead," may be said to be the logical development. The W.8F type has given excellent results in the Congo, but no machine is so good that it cannot be improved, and for use by Imperial Airways a more liberal power reserve and higher cruising speed were deemed desirable, with the consequence that, in the "Hampstead," the total power has been increased by something like 300 h.p. Not only so, but to give immunity from forced landings, a three-engined machine should have its three power plants all of the same power, so that if one stops the total power is reduced by one-third only. When the central engine is of greater power than the two wing engines this condition is not, of course, fulfilled, as in that case stoppage of the central engine means losing perhaps 40 per cent. of the power, instead of 33 per cent.

From the scale drawings of the Handley Page "Hampstead" it will be noted that the span is somewhat greater than that of the W.8F, the general arrangement drawings of which we published in our issue of May 1, 1924. This increase is due entirely to a lengthening of the centre-section, as the outer portions of the wings are identical with those of the W.8F, with which, in fact, they are interchangeable. The lengthening of the centre section was decided upon in order to get the three propeller discs clear of one another, as it was found in the W.8F, in which the large disc of the front propeller overlapped considerably the two smaller discs of the wing propellers, that the latter were apt to suffer from flutter, owing to the slipstream from the central propeller striking the tips of the two wing propellers. In the "Hampstead" the three propeller discs, it will be seen, clear one another by a considerable margin, and thus there should be no trouble from this source.

In other respects the "Hampstead" is similar to the W.8F, except for such changes as are due to the fitting of different types of engines.

A very neat engine mounting has been designed for the central Armstrong-Siddeley "Jaguar" engine, in the form of short tubes running from the engine bulkhead to the standard cup-shaped engine plate of the Armstrong-Siddeley "Jaguar." These tubes are so arranged as to triangulate the structure and at the same time all meet on four points on the engine bulkhead, so that the removal and replacing of an engine is a very simple matter. The two wing engines are mounted virtually each on a single interplane strut, this being the front strut, from which the engine plate projects laterally outwards, and is braced by a sloping strut from the bottom plane to the outside of the engine mounting, and by a horizontal tripod of steel tubes meeting on the rear interplane strut. The two wing engines are left entirely uncowed, as it is considered that the excellent accessibility thus gained more than outweighs any saving in head resistance that might be effected by elaborate streamline cowls. Each wing engine has its oil tank mounted behind it, but as in the W.8F, the petrol tanks are slung underneath the top plane, above and slightly inside the engine, so that direct gravity feed is available. The quantity of petrol carried is about 250 gallons.

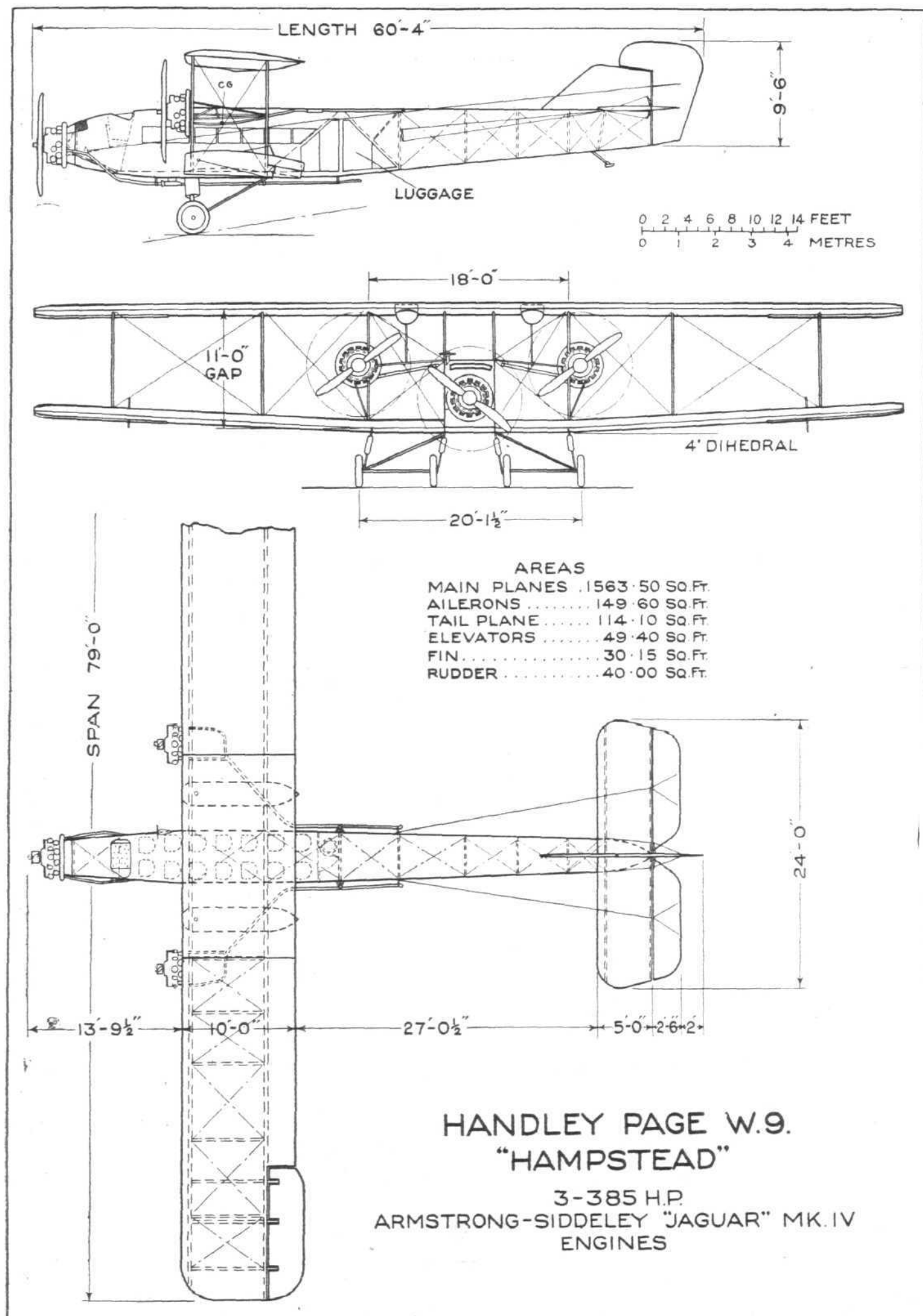
The cabin of the Handley Page "Hampstead" has seating accommodation for 14 passengers, seven on each side of the cabin, with a gangway down the centre. In addition there is aft of the cabin a large luggage compartment, as the 14 passengers do not by any means represent the whole of the available paying load. The windows of the cabin are in the form of triplex glass, and are designed so as to be raised or lowered. Further ventilation is provided by two tubes running throughout the length of the cabin, one on each side. These tubes, incidentally, form the net-racks provided for light articles, and form the diffuser box for the fresh air which thus, instead of coming from one point in the cabin, filters through throughout the whole length and on both sides. Air is forced in through these tubes by short feeder tubes projecting laterally outside the fuselage and having their outer ends turned forward, and for each feeder tube there is a valve which can be opened or closed by the passengers so as to regulate the supply of fresh air. For winter flying the cabin is heated from air muffs surrounding

an exhaust pipe, and the amount of hot air admitted (at floor level) can also be regulated by the passengers themselves. On the front wall of the cabin is a set of instruments, including air speed indicator, clock, and altimeter. Here also is an emergency signal by which passengers can summon the spare pilot or engineer in an emergency, a small sliding panel in the front wall giving access to the pilots' cockpit. This panel is smaller than in the older machines and is not now intended as the normal entry of the pilot, who reaches his cockpit from outside by a ladder of steel tubes permanently built on to the machine. Against the possibility of the machine being used for night flying, the cabin is lighted by three roof lights which should enable passengers to read or write during the journey should they feel so disposed.

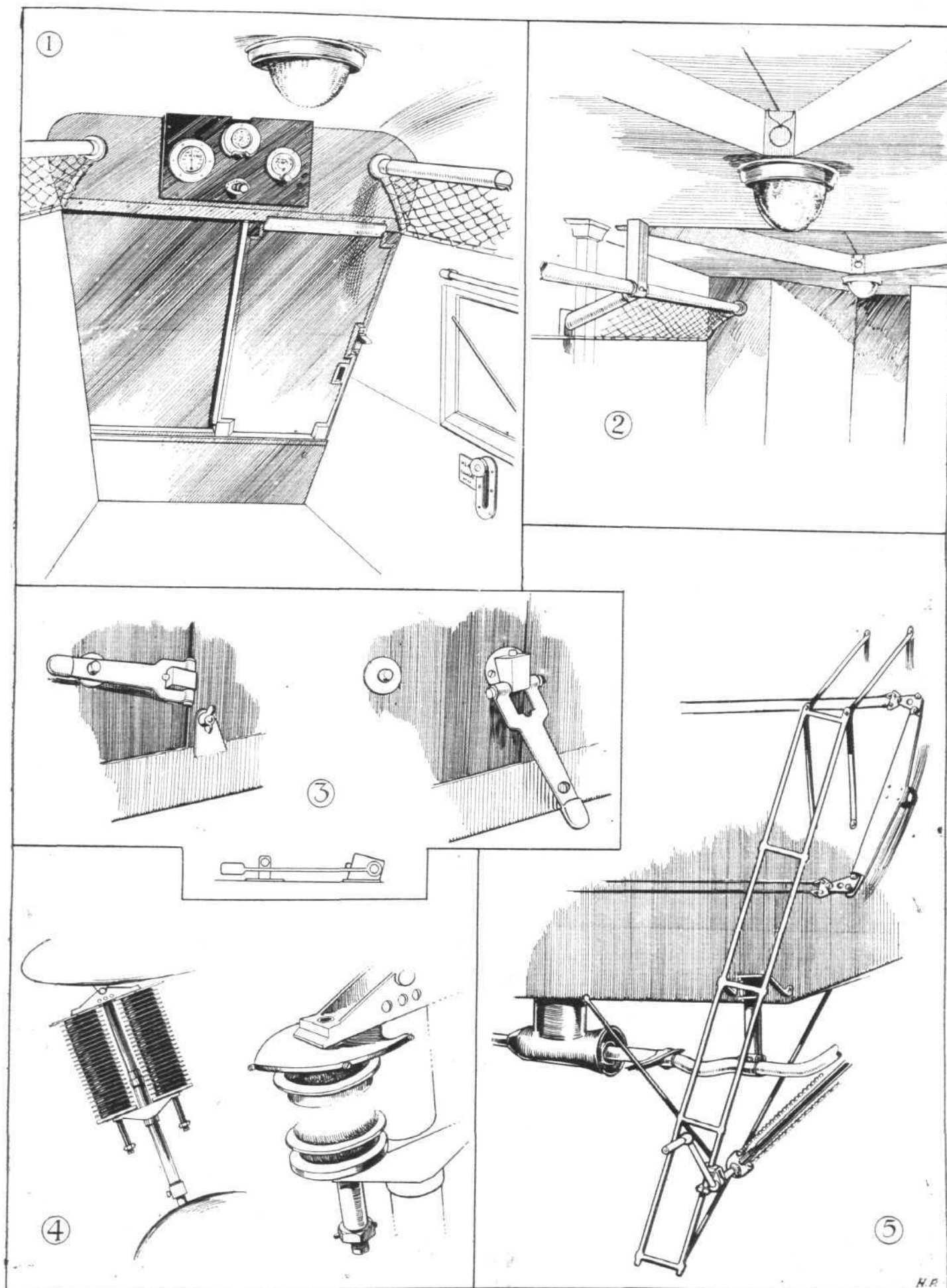
It might be argued that carrying 14 passengers with a total power expenditure of 1,155 b.h.p. is scarcely a commercial proposition, as it represents a power expenditure of 82.5 h.p. per passenger, but in this connection it should be realised that in addition to the 14 passengers there is an available paying load of something like 700 lbs. Actually the paying load of the "Hampstead" is 3,220 lbs., which figure does not include fuel, oil, or crew, so that the actual paying load is just under 3 lbs./h.p. Another factor which should be taken into consideration in this connection is that the machine cruises at just over 100 m.p.h. on very little more than half the total horse-power. Purely from the fuel economy point of view, it would probably pay to fly normally with only two engines running at slightly less than their full power, as this would give a better fuel consumption per horse-power; but against this must be set the fact that by normally running two engines nearly all out the reliability and life of the engines would probably be seriously impaired. It would, therefore, seem that although the fuel consumption per horse-power will be somewhat higher, it will pay in the long run to fly normally on all three engines, but with them throttled down to 60 per cent. or so of their full power. By doing this the engine reliability should be very materially enhanced, and the life of the engines should be greatly increased.

The good power reserve has, of course, many advantages which should be taken into account before hastily assuming that the machine cannot be a commercial proposition. For instance, with full load and all three engines running, the estimated rate of climb, at ground level, is 720 ft./min. This excellent rate of climb, combined with the relatively low climbing speed, should give an extremely good climbing angle, so that the "Hampstead" should be able to get off from quite a small aerodrome. It is further estimated that with full load and only two engines running, the ground level rate of climb will be 220 ft./min. which, if not spectacular, will, at any rate, enable the machine, should this become necessary for any reason, to get out of a reasonably large aerodrome with one engine out of action. Finally, it is estimated that with full load and two engines stopped the rate of descent would be about 280 ft./min., which corresponds roughly to a gliding angle of 1 in 20. This would mean that in still air the machine would be able to cross the Channel with but one engine working, provided its altitude at the start was a little more than one mile, say about 5,500 ft. Normally a machine would not, of course, commence a Channel crossing with two engines out of action, but the figures do help to show that by flying at a reasonable altitude the simultaneous failure of even two engines—which is an extremely unlikely occurrence—would not prevent the machine from reaching land safely.

The question of monoplane *versus* biplane in three-engined machines has not yet been settled. It would appear that if one wants a low landing speed the biplane arrangement is to be preferred, since it is difficult to get out of a full size wing the high lift necessary to give a low landing speed with the necessarily more heavily-loaded monoplane. On the other hand, in large machines it might be possible with the monoplane type practically to bury the two wing engines inside the wing, and thus save a not inconsiderable amount of head resistance. Something of the sort has, of course, been done in the three-engined Junkers monoplane, recently illustrated in *FLIGHT*. Against the possibly greater aerodynamic efficiency of the monoplane must be set the greater wing weight, which is inevitable in the cantilever monoplane structure, and, taking it all round, there does not seem any



THE HANDLEY PAGE W.9, "HAMPSTEAD": General Arrangement Drawings, to Scale



THE HANDLEY PAGE "HAMPSTEAD": Some detail features. 1 shows the front portion of the saloon, with instruments, sliding panel leading to pilot's cockpit, and net racks. The tubes of these serve as diffuser boxes for the fresh air. In 2 are seen the ripping panels in the roof, while 3 shows the special door handle of the luggage compartment, designed to facilitate sealing by Customs officials. 4 gives details of the compression rubber springing, and 5 shows the ladder to the cockpit, the starting handle for the front engine, and the hot-air muff around the exhaust pipe.

reason to suppose that there is very much to choose between the two types for the same (fairly high) landing speed, while for low landing speeds there can be little doubt that the biplane scores. In fact it is only by putting up the landing speed that the large monoplane becomes possible.

Another result of lengthening the span of the centre-section of the wings of the Handley Page "Hampstead" has been to increase the wheel track of the undercarriages, and an innovation has been effected in the undercarriages themselves in that the shock-absorbing gear is now in the form of rubber blocks working in compression, with an oil damper gear for checking bouncing. In other respects, the "Hampstead" is similar to the W.S.F. and the same wings fit both types. Owing to the fact that it was desired to make the wings interchangeable with those of the older type, no attempt has been made to incorporate such modern features as leading edge slots and slotted ailerons, although it is now definitely proved that these not only give good lateral control at and above the stalling angle, but that they can be made to give a corresponding yawing moment of opposite sign to the usual:

i.e., tending to steer the machine away from the dropping wing, instead of towards it, as is normally the case.

The main dimensions of the Handley Page "Hampstead" are given on the general arrangement drawings. The weight of the machine bare is 8,500 lbs., and to this figure must be added, when the machine is used as a passenger carrier 420 lbs. for fixed cabin equipment such as chairs, etc. The weight of fuel carried is 1,700 lbs. and 240 lbs. of oil. Assuming 360 lbs. for the crew, the total non-paying weight of the machine is 11,220 lbs. and as the airworthiness certificate covers a total loaded weight of 14,500 lbs., the actual paying load is 3,220 lbs. If the machine is used for carrying goods, so that the weight of cabin equipment, etc., can be saved, another 420 lbs. should be added to the paying load, bringing this up to 3,640 lbs. for the same cruising radius.

The estimated figures of climb, etc., have already been given, and in conclusion it may be stated that the estimated top speed is 117 m.p.h. The estimated service ceiling is 12,000 ft., and it is calculated that with two engines running the ceiling is 5,500 ft.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

SCHNEIDER CUP

THE Schneider Cup Committee met at the Royal Aero Club on Wednesday, September 23, 1925, when there were present:—Lieut.-Col. M. O. Darby in the Chair, Commander James Bird, Major J. S. Buchanan, H. Burroughes, H. T. Vane, Capt. C. B. Wilson, M.C., and H. E. Perrin.

The arrangements for the shipping of the machines and spares on the *Minnewaska*, on the 26th inst., at King George V. Dock, were approved.

The following Committee was appointed to assist the Club representative, Capt. C. B. Wilson, on any questions which may arise in Baltimore:—

Major J. S. Buchanan, Lieut.-Col. M. O. Darby, H. P. Folland, R. J. Mitchell, H. T. Vane.

The Committee dealt with the correspondence from the Flying Club of Baltimore on the question of the course for the race, the navigability tests, and the accommodation for machines and personnel at Baltimore.

Schneider Cup Expenses Fund

The following donations towards the expenses of sending over the British Challengers were reported:—

Royal Aero Club	250
Shell-Mex, Ltd.	250
Fairey Aviation Co., Ltd.	100
Short Bros.	50
Titanine-Emallite, Ltd.	50
Robinhood Engineering Works, Ltd. (K.L.G.)	50
Claudel-Hobson Carburettors	50
British Thomson-Houston Co., Ltd.	50

Racing Numbers

The racing numbers allotted by the National Aeronautic Association of U.S.A., were reported as follows:—

United States	1, 2, 3
Great Britain	4, 5
Italy	6, 7

The personnel sailing on the *Minnewaska* with the machines is as follows:—

Royal Aero Club.—Capt. C. B. Wilson.

Pilots.—H. C. Biard, H. S. Broad, B. Hinkler.

Firm's Representatives.—R. J. Mitchell (Supermarine Aviation Works, Ltd.), H. P. Folland (Gloucestershire Aircraft Co., Ltd.), F. P. Jones (Messrs. D. Napier & Son, Ltd.), W. Lind Jackson (Messrs. D. Napier & Son, Ltd.).

Mechanics.—H. Austin, G. H. Broom, C. Coe, H. N. Grimes, H. Martyn, H. B. Pickett, J. E. Oram, A. Powell, H. Powell, P. Turner.

INTER-CLUB CONFERENCE

A MEETING of Representatives of the Light Aeroplane Clubs was held at the Royal Aero Club, London, on Tuesday, September 22, 1925, when there were present:—

London Aeroplane Club.—Lieut.-Col. F. K. McClean, Mr. G. H. Davies, Mr. H. E. Perrin.

Lancashire Aero Club.—Mr. J. F. Leeming, Mr. R. Williams, Mr. A. Goodfellow.

Newcastle Aero Club.—Capt. J. H. Boyd.

Midland Aero Club.—Major R. Vernon Brook, Major G. Dennison.

Yorkshire Aeroplane Club.—Major G. J. King.

The delegates considered the draft agreement between the Air Council and the respective Clubs. In the afternoon the delegates met the representatives of the Air Ministry under the chairmanship of Lieut.-Col. I. A. E. Edwards, C.M.G., when the various recommendations proposed by the Clubs were submitted.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary

Aviation in Finland in 1925

It has been necessary to cancel the projected service on the air route Helsingfors-Reval owing to the fact that the harbours of Helsingfors did not freeze during the last exceptionally mild winter. The service on the route in question was regularly kept in 1922, 1923 and 1924, partly by the Estonian Association "A/S Aeronaut," and the Finnish Association "Aero O/Y." The summer service went on normally on the same route and further on to Riga and Berlin. It was also the case regarding the air route Helsingfors-Stockholm. On these two routes there was one daily service in both directions. The service to Reval is still maintained. During the period April 20 to September 1, the number of

passengers carried was 653, the weight of letter post carried, 382 kg., and newspapers carried, 344 kg. The weight of goods carried was 539 kg. The air route Helsingfors-Stockholm has been open from May 15 last to September 1 inst. The service was maintained in conjunction with the Swedish Association "Aktiebolaget Aerotransport." The number of passengers carried was 436, the weight of letters carried was 340 kg., newspapers, 918 kg., parcels, 133 kg., and goods, 590 kg. Regarding the service on the regular air routes concerned all trips have been fulfilled according to the timetable. The flight from Helsingfors has only three times been late owing to fog or other reasons. No accidents have occurred on the regular Finnish air routes.

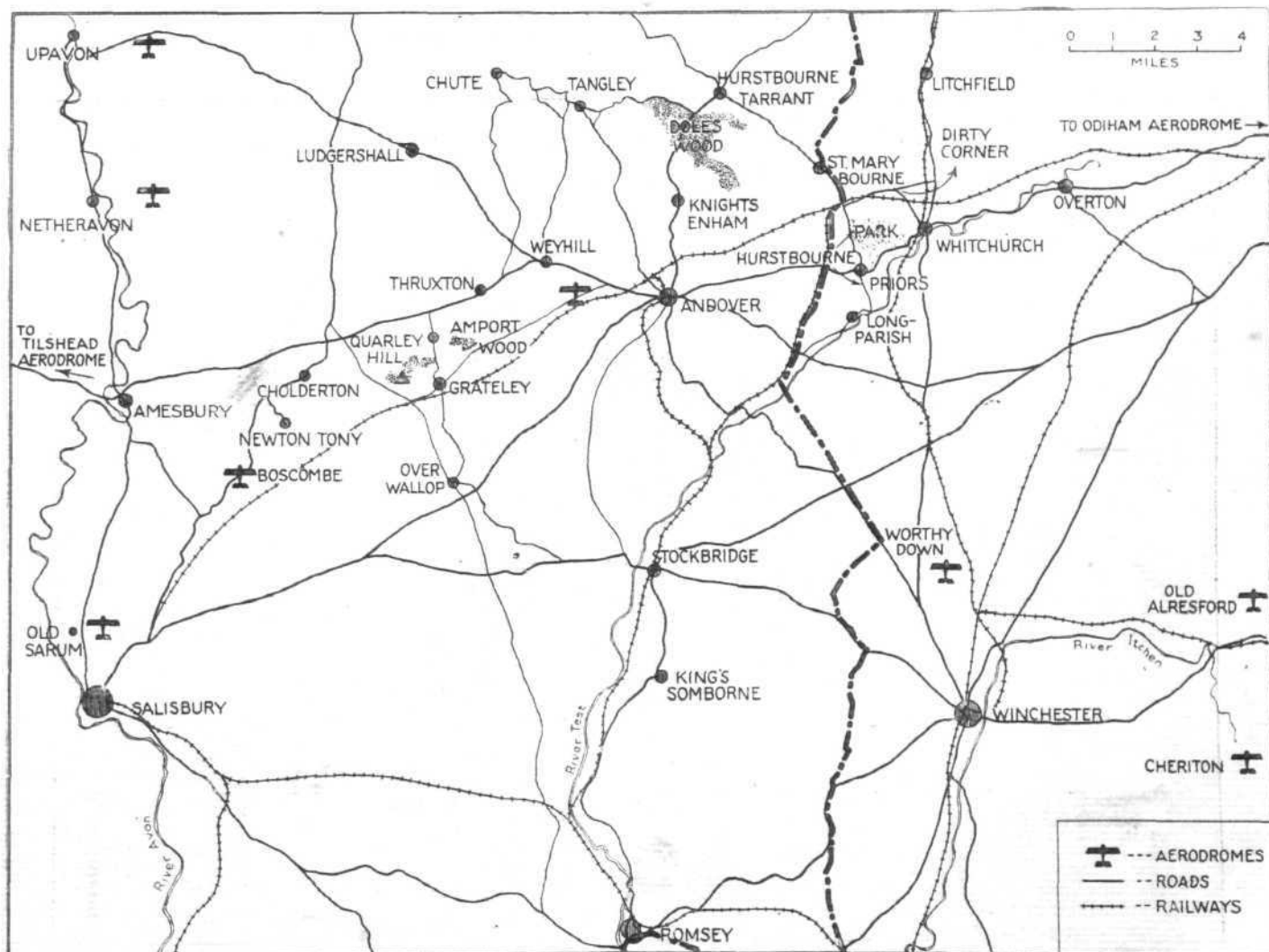


The R.A.F. in Army Manœuvres

By MAJOR F. A. de V. ROBERTSON, V.D.

ALL through the summer the brigades and divisions of the Army have been training and practising mimic warfare from Aldershot to Salisbury Plain, and with them have trained and toiled the four Army Co-operation squadrons of the Royal Air Force, Nos. 2, 4, 13 and 16, in their Bristol two-seaters. In this article I propose to avoid using the good old name Bristol fighter, because the term "fighter" now implies a single-seater fighter, and therefore is apt to cause confusion. Occasionally the Air Ministry detailed another squadron to assist in this training. After all the divisional training was over, the work of the Army culminated in grand manœuvres round Andover from September 22 to 24 inclusive. While

the previous training of the smaller units perfected all ranks from major-generals down to private soldiers in their respective tasks, the grand army manœuvres always are designed to give the higher commands practice in strategy and major tactics, and to test out new theories, new systems, and new weapons. The readers of *FLIGHT* are naturally concerned primarily with air matters; but in studying the work of the Air Force during those three strenuous days, they must regard the air squadrons as an arm of the Army. Among the problems on which new light was sought in these manœuvres were the extent to which aircraft can assist its own higher command and hamper that of the enemy; the extent to which aircraft



ARMY MANŒUVRES: Sketch Map of the Area included.

has rendered cavalry obsolete; the degree of immunity against air attack which is possessed by tanks; the degree to which aircraft can work in bad weather; the whole system of reconnaissance and reports by air; the efficiency of the new system of using air umpires on manœuvres; and many other points.

In fact, the air squadrons must be regarded as an integral part of the Army, woven into its fabric. Consequently, it is not possible to describe the work of the R.A.F. squadrons in the Andover campaign without following the fortunes of the two armies with which they worked, and even mentioning with occasional detail operations in which, so far as a spectator could see with his own eyes, the airmen were not directly interested. As a matter of fact, no movement of any importance took place in which the reconnaissance machines were not concerned; but even if that were not so, the excellence and effectiveness of the air work can only be appraised with justice when the full picture is painted in. Pure air work, such as air combat, in which the ground troops can take no share, does not figure in army manœuvres. It teaches lessons to no one outside the Royal Air Force, and that is sufficient reason for excluding it.

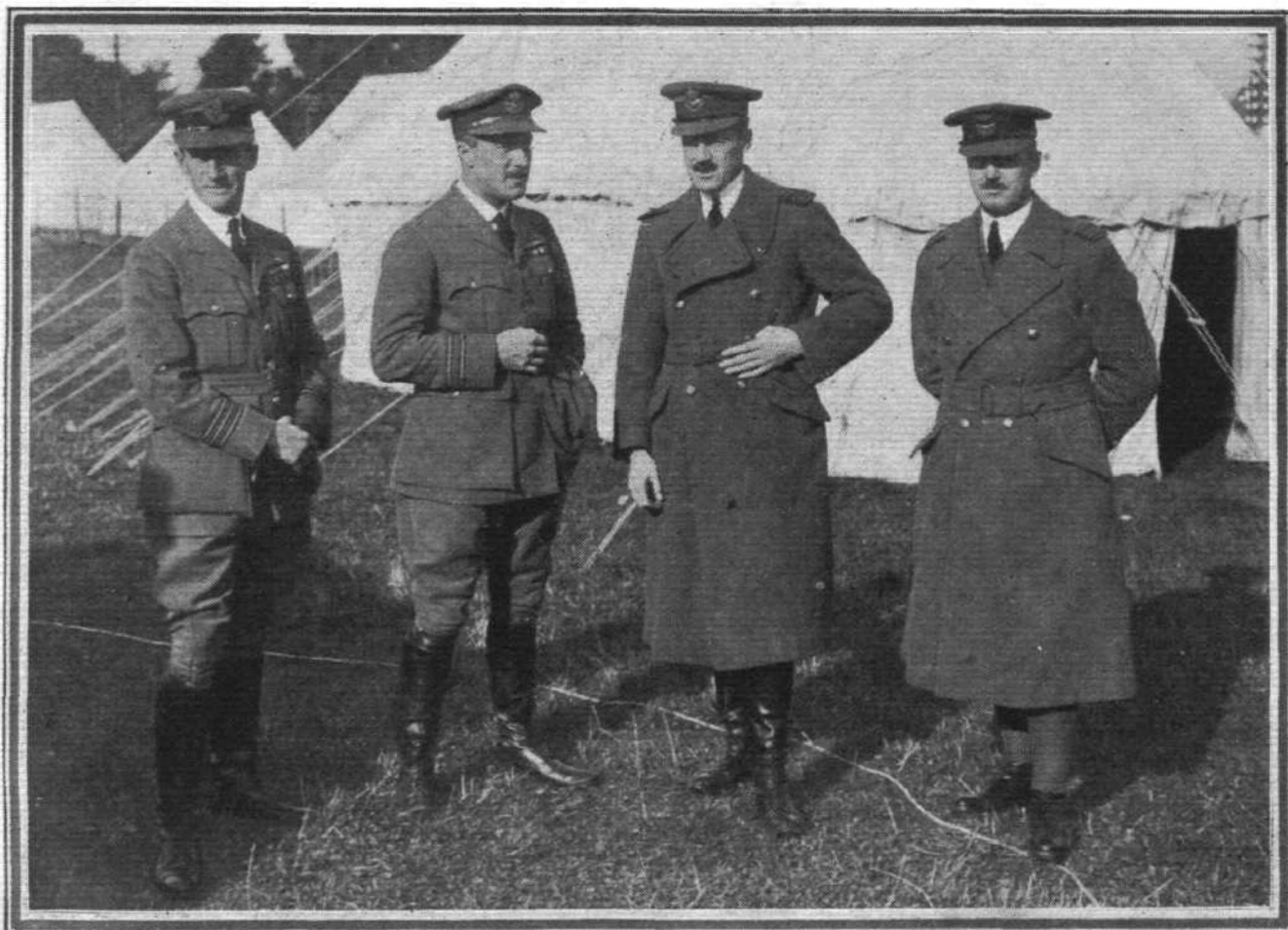


A Believer in Aircraft: Earl Haig, who with the foreign attachés, got strafed by a squadron of Grebes

The General Idea

Strategy always goes hand-in-hand with politics, and one cannot set armies at each other's throats without considering the political situation which has caused the war. This necessitates the drawing up of an historical fairy tale known as the General Idea.

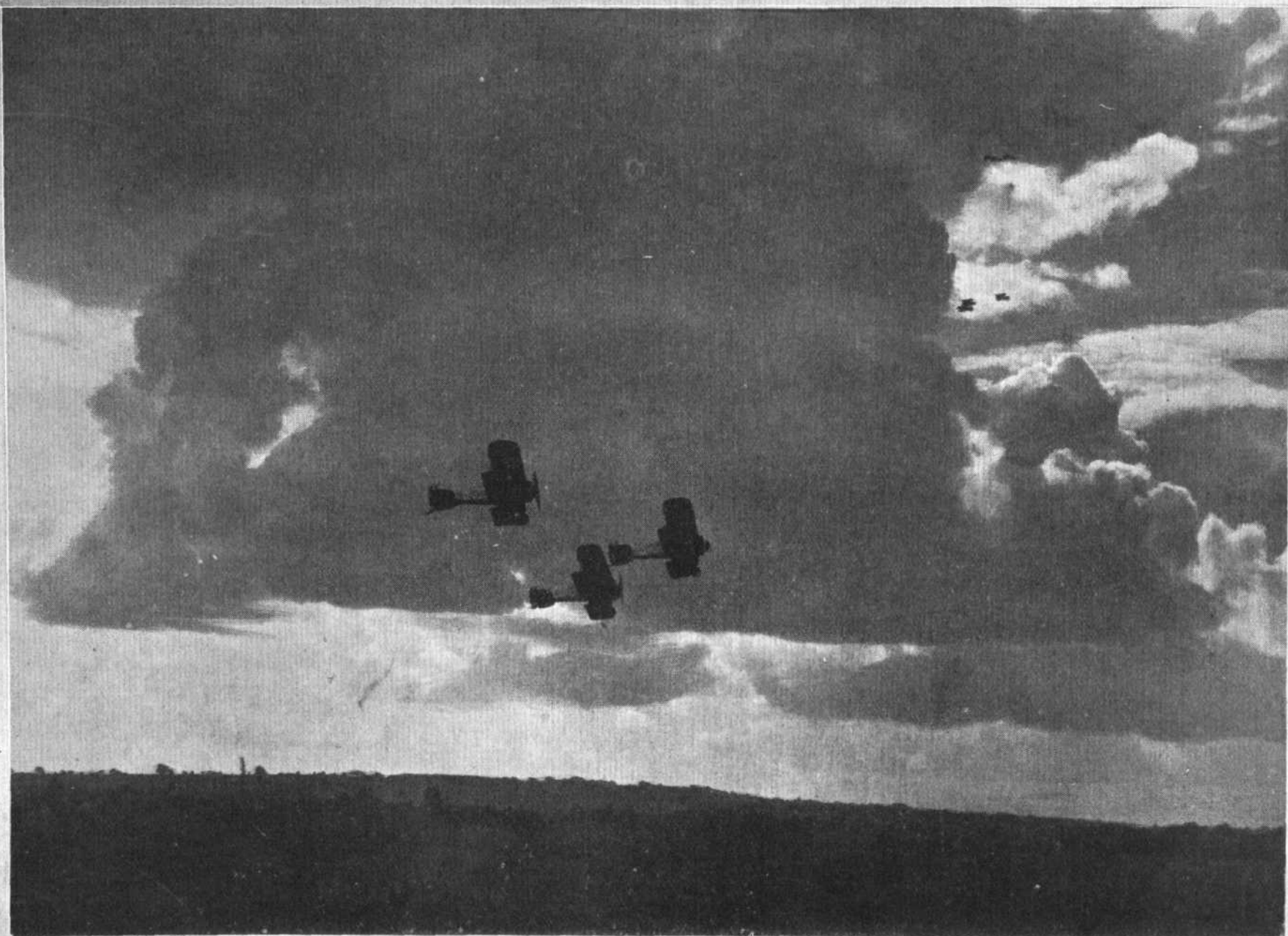
For the purposes of this war, England was divided into four kingdoms: Northumbria, including all the north; Buckingham, a weirdly-shaped Midland corridor extending from both corners of the Wash in a south-westerly direction, with its southern frontier running along the line Marlborough-Newbury-Reading-Maidenhead. To the east of it lay Mercia, and to the west and north-west lay Wessex. These names, by the way, have only the vaguest reference to the old Anglo-Saxon kingdoms, and of the historical kingdom of Mercia hardly a single county was included in this manœuvre's Mercia. As a particularly glaring instance of historical inaccuracy, the town of Winchester was placed, not in Wessex, of which it was the ancient capital, but in the modern Mercia. The boundary between Wessex and Mercia ran due north and south for 30 miles from Newbury to Southampton. It did not follow any natural line of country,



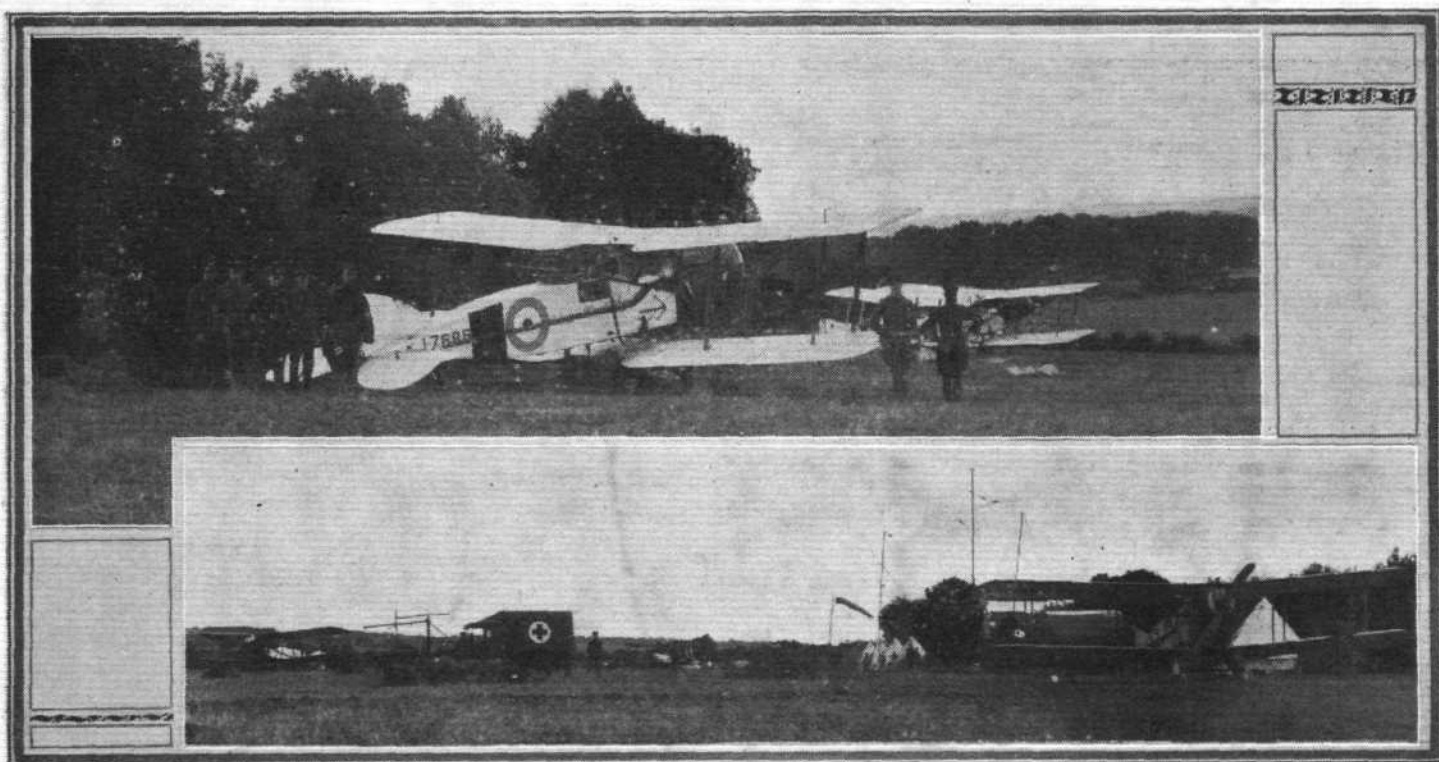
SOME OF THE AIR UMPIRES IN H.Q. CAMP: Wing-Commander F. L. Robinson, D.S.O., M.C., D.F.C. (3rd Division, Wessex), Sq.-Ldr. R. H. Peck, O.B.E., Wing-Commander J. T. Babington, D.S.O., Flight-Lieut. J. A. Glen, D.S.O.

OCTOBER 1, 1925

5



TAKING OFF BY FLIGHTS : In eight minutes exactly from receipt of the order the three flights of No. 25 Squadron were in the air



AT OLD ALRESFORD AERODROME: Above, Bristols of No. 2 A.C. Squadron pegged out. Below, a view of the Aerodrome.

and was therefore a splendid example of a political as opposed to a geographical frontier.

Wessex and Northumbria were at war, and in a battle near Derby the West Saxons had gained a considerable success and expected a decisive victory in a few days. Buckingham was firmly neutral, and therefore its frontier must not be violated. Mercia decided to come to the help of Northumbria by making a surprise attack on Wessex. Doubtless that artificial boundary imposed by some fairyland League of Nations tempted the Mercian Government to seek its place in the sun. At any rate, it appointed Lieut.-General Sir Philip Chetwode Commander-in-Chief, moved its 4th Division up to Whitchurch

and Winchester, just behind the frontier, while the 2nd Division began to move up on the right or northern flank, and the 1st Division on the left or southern flank. General Chetwode was ordered to cross the frontier, without any declaration of war, as soon as he was ready to do this with sufficient forces to strike a decisive blow, but not before.

Meantime the Wessex Government had received information of the felonious intentions of Mercia. It had left General Sir Alexander Godley with a small force to watch this frontier, and, being assured of speedy victory in the main campaign round Derby, it promised that substantial reinforcements should march down from there and join General Godley at



NO. 2 ARMY CO-OPERATION SQUADRON AT THE CAMP AERODROME OF OLD ALRESFORD:
 1. Flying-Officer R. A. P. Roberts. 2. Capt. R. A. Heard. 3. Flying-Officer R. B. Jordan. 4. Squadron-Leader R. E. Saul, D.F.C. 5. Flying-Officer J. F. Bythell. 6. Major R. E. Pakenham Walsh. 7. Flying-Officer E. S. Osborn. 8. Flight-Lieut. N. L. Desoer. 9. Flying-Officer H. P. L. Gardner. 10. Flying-Officer W. A. G. Goldsworthy.

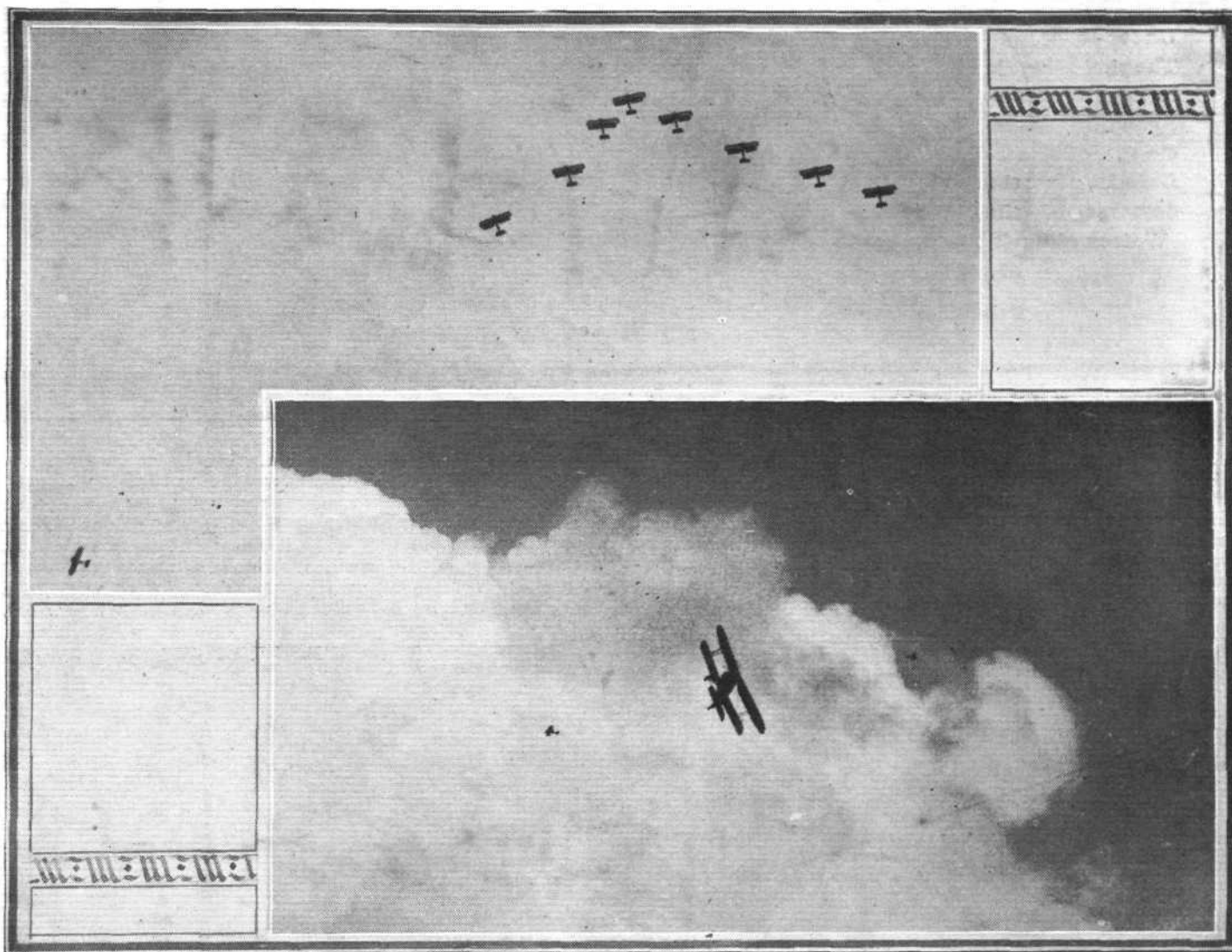
noon, on September 25. Up to that hour, General Godley was instructed to hold the Mercians east of a line running from Salisbury to Upavon.

The Wessex forces were well chosen for the task allotted to them. There was only one division, the 3rd, backed by the 162nd Infantry brigade (Territorial Army), but to compensate for this weakness in infantry and field artillery there was a complete cavalry division, almost a complete brigade of horse artillery, a battalion of tanks, and a company of armoured cars. One of the infantry brigades, the 7th, was mechanised, that is to say, that the whole of it moved in motor lorries. Mobility was, therefore, the strong point of the Wessex force, in contrast to the heavy striking power of the Mercians.

The Rival Air Arms

The Mercian forces were weak in cavalry and had no horse artillery or armoured cars, though the nominal strength of tanks on either side was equal. To compensate for this, the

The Mercian superiority, therefore, was not so great in reality as it appeared on paper, and as it was usually stated to be by military correspondents of various papers who had not made a special study of air matters. The Mercians had three Bristol squadrons to one squadron and one flight on the Wessex side, while the two forces were precisely equal in fighters and bombers. Now the Bristols were used almost entirely for reconnaissance and the kindred work of artillery observation. With very few exceptions, they kept regularly at a height of 3,000 ft., and used their eyes, their cameras and their radio-telephony, rather than their bombs and their machine guns. When they spotted a ground target they almost invariably called up Grebes to attack it. On only one occasion did I actually see a Bristol attack ground troops with its guns, and there, if the cartridges had not been blank, the FLIGHT correspondent would certainly have been bagged. Perhaps the pilot of a Rolls Royce engine took exception to the proximity of a Trojan car! The disparity in aircraft



THE RETURN AND THE DISPERSE: Above, No. 25 has accomplished its mission, and, below, Letting off Steam. After breaking formation the pilots of No. 25 display a little individuality.

Mercian forces had a superiority of aircraft. For the sake of clearness, the air forces may be arranged in tabular form:—

MERCIA (Blue).	WESSEX (Red).
<i>Army Co-operation Squadrons (Bristols).</i>	
No. 2 (Squadron-Leader R. E. Saul, D.F.C.).	No. 16 (Squadron-Leader J. O. Archer, C.B.E.),
No. 4 (Squadron-Leader J. C. Slessor, M.C.).	Special Flight from
No. 13 (Squadron-Leader C. C. Durston).	School of Army Co-operation.
<i>Fighter Squadrons (Grebes).</i>	
No. 25 (Squadron-Leader A. H. Peck, D.S.O., M.C.).	No. 56 (Squadron-Leader F. J. Vincent, D.F.C.).
<i>Bombing Squadrons (D.H.9A.).</i>	
No. 207 (Squadron-Leader V. Gaskell-Blackburn, D.S.C., A.F.C.).	No. 39 (Squadron-Leader H. V. Champion de Crespigny, M.C., D.F.C.).

may probably be explained by saying that the mobile forces of Wessex required the most watching.

In general, the intention was that each Bristol squadron should work with one division, No. 16, of course with the 3rd Division, and the special flight with the Wessex cavalry division, No. 4 with the 2nd Division, No. 2 with the 4th Division, and No. 13 with the 1st Division, while the fighters and bombers were always in the hands of corps H.Q. This, however, as is usual, did not work out quite according to plan. For instance, the 1st Division was hardly engaged with the West Saxons until the last day, but it would have been wasteful to keep No. 13 squadron aground until the end of the battle.

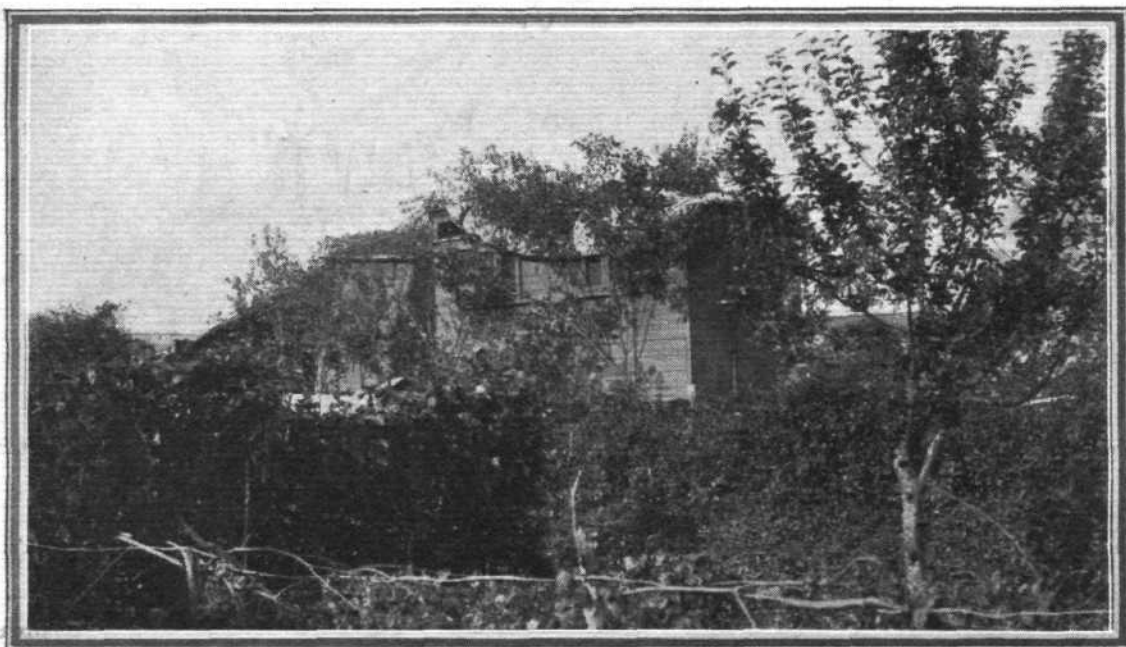
A couple of other points connected with this allocation of aircraft should be noticed. Only four divisions of the British Army were in the field, yet not only were all the Army co-operation squadrons fully employed, while an extra flight was screwed out of the School of Army Co-operation, but the total number of squadrons had actually to be doubled.

The Air Ministry lent four squadrons who do not exist for the purpose of army co-operation. I shall revert to this point later. In the next place, the four squadrons which the Air Ministry selected for this work were the two most efficient Grebe squadrons and the two most efficient D.H.9A. squadrons in the country. By the excellence of their work during the early part of the year, Nos. 25, 39, 56 and 207 had earned for themselves the honour of taking a very prominent part in the R.A.F. Display last June. For the same reason they were given the chance of death or glory in army manœuvres.

mass through the vilest weather was a sight to make one marvel.

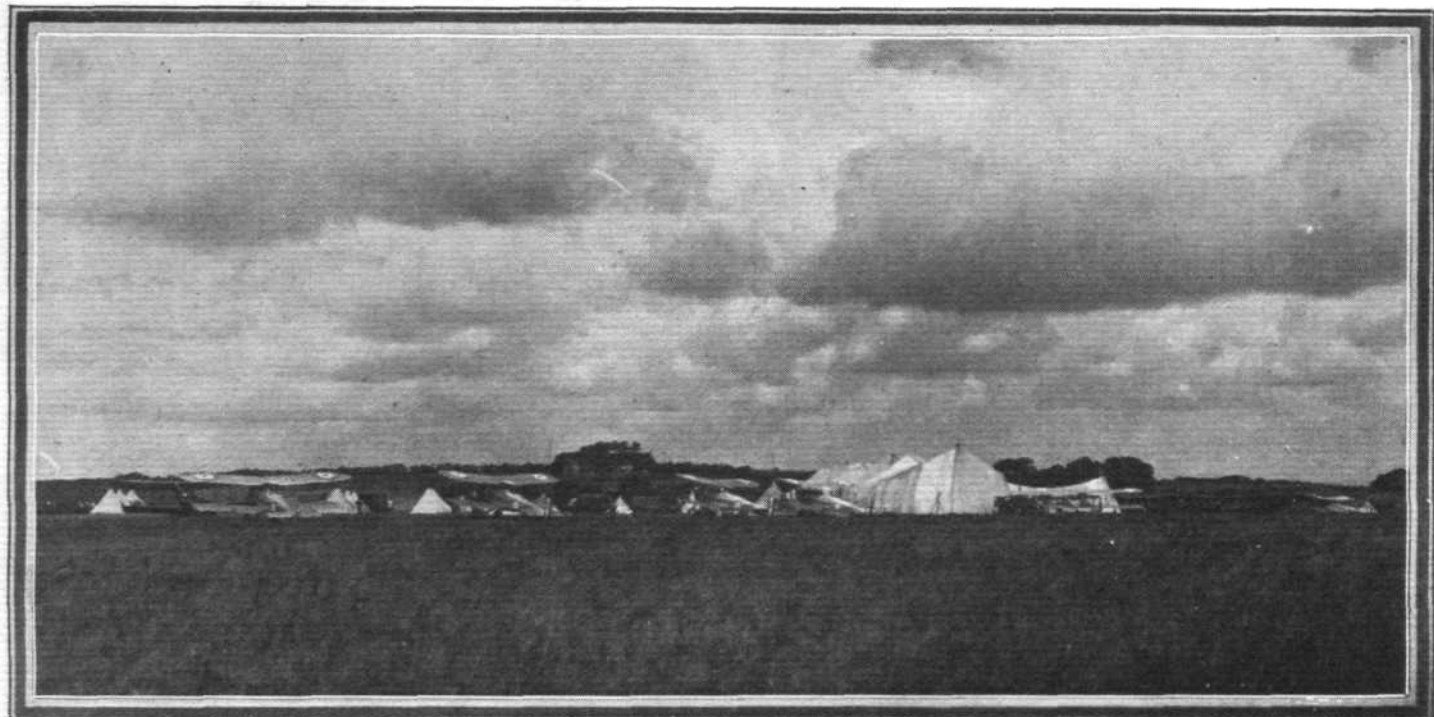
The two bombing squadrons, Nos. 39 and 207, came rather less into the public eye than did the Bristols and Grebes. Their aerodromes lay far back, and it was not possible to visit them without neglecting other matters. One did not very often see the D.H.9A's flying over the battlefield—though I have a very vivid recollection of No. 207 passing over my head one afternoon to work mischief on the rear of the Wessex force, and keeping formation in squadron mass

Under - exposed :
The photographic
lorry of No. 2 A.C.
Squadron (Mer-
cian), camou-
flaged against the
cameras of the
Wessex aircraft



Just on the eve of manœuvres, Squadron-Leader Sir Christopher Brand, K.B.E., D.S.O., M.C., D.F.C., was summoned to the Air Ministry to take up an appointment in the Supply and Research Department. This was very hard luck on No. 56, whom he had trained so thoroughly for the last two years. But his work remained, and Squadron-Leader Vincent led No. 56 so well that this famous squadron increased its reputation still further. On the other side,

as perfectly as they did at Hendon. But I saw the reports of the work done by the bombers and know that it was good and was accounted unto them for righteousness ; and if their names appear less frequently in the following narrative than those of the Grebes and Bristols, it is not because the D.H.9A's are any less worthy of mention. I must plead the limitations of a single correspondent trying to do a lot of work in a short time, and to cover much country in a rather slow car.



ODIHAM CAMP AERODROME : No 13 Army Co-operation Squadron and No. 25 Fighter Squadron of the Mercian force in camp

Squadron-Leader Peck had lost quite a number of the "Cuckoos" who put up such a truly beautiful show at Hendon. But there, again, worthy successors had stepped into the vacant shoes, and to see No. 25 flying in squadron

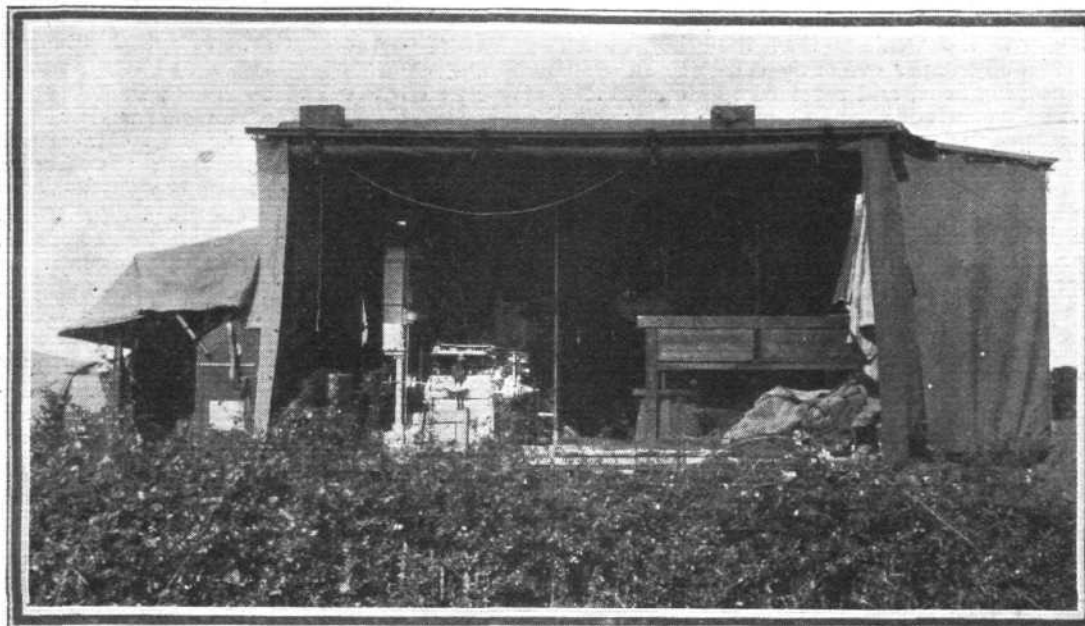
The Eve of Battle

On Monday, 21, at 2 p.m.—I beg pardon, at 1400 hours—some 40 odd correspondents assembled at the camp of the Directing Staff about a mile outside Andover, and after

much ploughing about through mud were finally directed to the tent of the N.A.A.F.I., received by the very friendly and helpful Press Officer, Lieut.-Col. N. H. C. Sherbrooke, D.S.O., R.A., and were addressed by the Director of Manœuvres and Chief of the Imperial General Staff, General the Earl of Cavan, K.P., G.C.M.G., G.C.V.O., K.C.B. We were very sorry to learn that Lord Cavan had started his "manœuvres cold" rather early in the day. His distinguished example provoked the sincerest form of flattery in many others, warriors

Whitchurch on the morrow. It ought to get lively about noon. He did not know how fast the Wessex mechanicalised brigade would move up, and he was very anxious to see the result of what, I suppose, may still be called an experiment.

That evening two or three of us correspondents motored out to Odiham, where Nos. 13 and 25 Squadrons of the Mercian Air Force had a temporary aerodrome. It stood on chalk, and there was lots of mud in the camp, but the officers



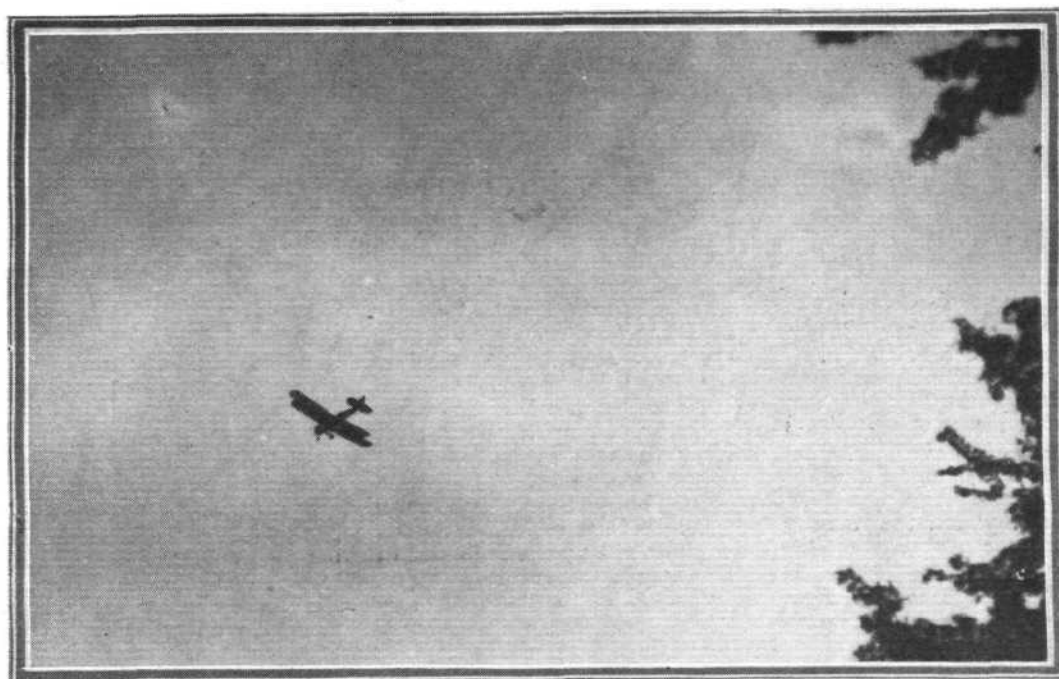
A workshop lorry
of No. 13 Army
Co-operation
Squadron (Mer-
cian)

and correspondents, before the cease fire was sounded. His lordship told us a lot of confidential information, having a sublime confidence in the integrity and discretion of members of the journalistic profession. We gathered that Gen. Godley would on the morrow send his 7th (mechanicalised) brigade accompanied by armoured cars, dragon-drawn artillery, tanks, and cavalry—in fact, everything which could move fast, to strike at the right flank of the Mercian 4th Division between Whitchurch and Overton, where the little river Test runs almost due west. To meet this, Gen. Chetwode

said it was not at all a bad aerodrome for service conditions.

All of them seemed keen and fit, and we were very hospitably received. No. 56 started the war at Weyhill, where the Staff College lives, but when the Wessex retreat began they moved back to Boscombe and later to Tillshead. No. 2 was camped at Old Alresford, and No. 4 remained in their normal home at Farnborough where the Air H.Q. of Mercia was located under Air-Commodore D. le G. Pitcher, C.M.G., C.B.E., D.S.O.

Peering for the
Mercians: A Wes-
sex Bristol low
over Whitchurch
in heavy rain



The Battle of the Test

was hurrying up his 2nd Division. On the Mercian left, the 1st Division was to remain somewhat "refused" or held back. Gen. Godley, however, intended to send some armoured cars down to the south, to cross the Test at Romsey, and see what damage they could do. Lord Cavan advised us to watch the battle of the Test in the neighbourhood of

The Wessex declaration of war on Mercia took effect from 0700 hours on Tuesday, September 22. Living at Andover, I was at first in Wessex territory, and a few minutes after 7 o'clock I saw a red (Wessex) Bristol over the town. The next sign of martial activity was the fine spectacle of the

Royal Horse Guards trotting through Andover on the road to Newbury, evidently to take part in the attack of General Godley's mobile force on the Mercian right. I was soon on the road, motoring to Whitchurch, and on to Overton. Parties of Mercian troops (who all wore steel helmets) were dotted all along the road, and when they halted they were always under large trees. The hedgerows by that road are full of splendid timber, the branches mostly meeting overhead, so that it would be almost impossible for aircraft to discern what was actually happening on the road. Then the roseate hues of early dawn behaved in the traditional manner, as related by King Charles the Martyr, and down came the rain in torrents. So horrible was the weather that the correspondent of one prominent daily paper evidently concluded that aircraft could do nothing in it, and reported to that effect to his paper. I can only conclude that he himself took good rainproof cover and stayed under it, for as I moved about the sky was never for one moment empty of Bristols, wheeling like vultures overhead. As a matter of fact, the clouds for the most part were not low, and visibility was not too bad. I made inquiries later from an authoritative source and learnt that during all that day every troop movement of importance was reported to the respective commands by the aircraft; and that for hours at a stretch there was a ceaseless stream of reports from the air but no other information at all.

Meantime I was thirsting to see a battle. My soul craved

circle. It was a most inspiring spectacle. The umpires allowed 10 per cent. of casualties among the two companies of the Berkshires who were caught. Then No. 25 reformed squadron mass and went off for other prey. That morning they sighted all the foreign attachés and visitors and performed the same manœuvre over them, just to show how British aircraft do it.

Afterwards I went up to the scene of the slaughter, but the Berkshires had departed, carrying their dead and wounded with them. An officer of the 3rd/6th Dragoon Guards emerged from a copse near by and told me that he had 50 horses and half a dozen machine guns in the copse, but he had not opened fire on the aircraft. Presumably he had strict orders not to give away his position. It then turned out that the Wessex cavalry had succeeded in occupying the woods along the right bank of the Test, and were waiting for the infantry to take over the line. This change was effected later on, and during the afternoon the Wessex brigades gained some temporary successes, captured Whitchurch for a while, and also captured the Brigadier and H.Q. of the Mercian 10th infantry brigade. Subsequently, however, part of the Mercian 2nd division came up in a fine forced march (some of the infantry covered 17 miles in 5 hours) and restored the line, driving the Wessex troops away from the banks of the Test.

That morning I also saw a flight of No. 56 Squadron flying low above the tree tops over the Mercian lines. They caught



ANTI-AIRCRAFT PRACTICE : Airmen of No. 25 Fighter Squadron manning their "guns".



"ENEMY AIRCRAFT OVER" : The Klaxon alarm signal of No. 2 A.C. Squadron

for a scene of gory slaughter. But the war was invisible and inaudible. Occasional pickets of troops, a very occasional shot from an anti-aircraft gun, and that was all. I ranged up and down the road several times in vain, wondering what had become of the Wessex attack, which was to move so fast. As a matter of fact, it took about as long to develop as if the infantry had footslogged all the way; and Lord Cavan must still be without convincing proof of the value of a mechanised brigade. So I went up a second-class road out of Whitchurch leading to high ground beyond, and on the top of a hill I "debussed" and swept the land with binoculars. About half-a-mile to the north-west, the road along which the Wessex troops might be expected topped another hill, and coming down that hill was a regiment of infantry, the Royal Berkshires, as I afterwards learnt. Then I enjoyed the finest sight which fell to the lot of any correspondent that morning. A Mercian Bristol faded away over the tree tops, and we almost fancied we could hear its frenzied radio-telephonic summons to the fighters. Scarcely a minute passed ere a roar to our left turned our eyes from the slow-moving infantry, and there were the nine Grebes of No. 25 tearing up in squadron mass. The hedges of the road were low, and afforded no cover. The squadron changed into circular formation over the heads of the devoted infantry, and fell upon their prey in scientific fashion. Now from one direction and now from another in rapid succession, Grebe after Grebe dived on the Berkshires, shooting and bombing, and then zoomed up to its place in the wheeling

the 4th Guards Brigade on the march and delivered a rapid attack. The umpires only gave two limbers as destroyed, but my informant, a correspondent not specially connected with the Air Force, considered that the Guards would have suffered a good deal more than that; while the three Grebes appeared and disappeared so quickly that no effective fire could be brought to bear upon them.

I must now revert for a moment to the southern end of the line. There a section of Wessex armoured cars crossed the Test by the bridge at Romsey and split up into two subsections of two cars each. One wandered off and disappeared. I never heard its adventures, but I believe it ultimately got back to its own lines safe and sound. The other section got between columns of the Mercian troops, laid up successfully in by-lanes when necessary, emerged occasionally to shoot up the supply trains, and captured a cyclist with important messages on him, which were successfully passed on to Wessex headquarters. The cars then went on and attacked the Mercian aerodromes at Odiham and Farborough. Their machine guns were held not to have done much harm to the hangars, which is a very interesting point. The airmen put up a plucky fight with rifles and would doubtless have suffered casualties, but the cars could only afford brief visits. One car became disabled and was left on a road to delay transport while the other safely regained its lines.

Odiham, however, was not to enjoy security for the rest of that day. Between 18.30 and 19.00 hours No. 39 Squadron and No. 56 Squadron raided it heavily. Twenty machines



IN FEAR OF AIRCRAFT : Camouflage sheet is put over Dragon whilst repairs are carried out

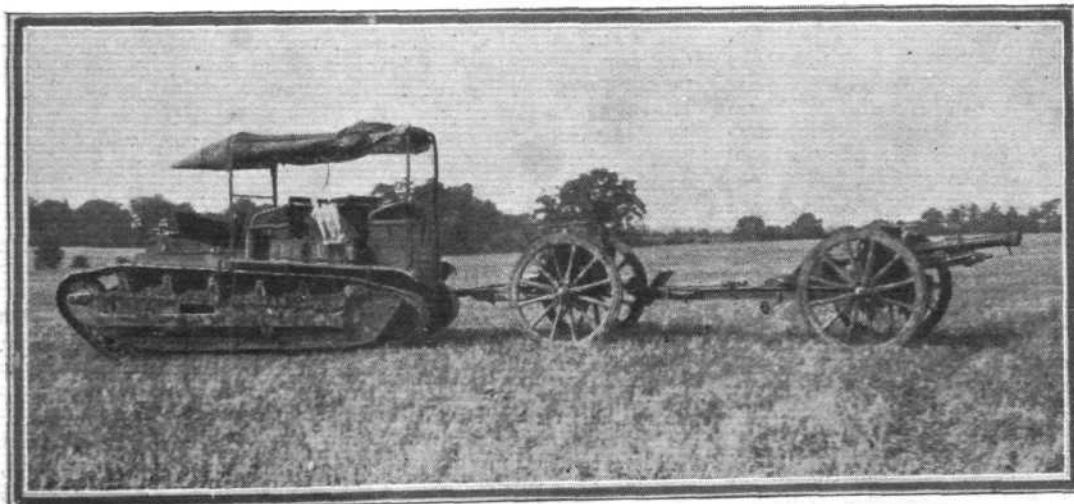
were found on the ground and were put out of action ; and next day each of those two Wessex squadrons sent over two flights again to Odiham, and they secured a bag of three machines.

Wessex Retires

On Wednesday, September 23, at 09.25 Mercian aircraft raided Wessex Corps headquarters at Weyhill and cut all



THE BRISTOL KNEW BETTER : Mercian officer "captures" a dragon which had been blown up the night before



telegraphic and telephonic communications. For 20 minutes General Godley and his staff were out of action.

It had seemed on the previous night that the Wessex left flank attack would result in disaster. The Mercian 2nd Division had come up very fast and driven the Wessex rapid column back. The line of retreat lay almost across the front of the Mercian 4th Division, and if both 2nd and 4th Divisions took vigorous action it looked very doubtful whether General Godley could break off the engagement and extricate his men and guns. But I suppose the 2nd Division were very tired troops and certainly very wet ones, and even a Guards Brigade finds a limit at last. I went out that morning in the direction of Litchfield to see what was happening. As before, it was very hard to see anything. But I found a disabled Wessex dragon in a field. Perhaps I should explain that a dragon is a tractor which draws a gun and can move at 20 m.p.h. across country. The delicate mechanism of the gun sights is said to find this usage rather upsetting. There was



AFTER THE AIR RAID : The 7th Hussars (Wessex) were heavily attacked by No. 25 Fighter Squadron as the cavalry brigade broke cover to assemble at St. Mary Bourne

an R.A. driver in charge of this dragon, a cheery soul, who declared that he had blown his dragon up last night, while another dragon had hauled off his gun. There were two other disabled dragons not far away. As I left him I spied a tin hat behind a hedge, and presently a Mercian officer emerged, revolver in hand, and dashing captured the dragon which had been blown up and the driver who had escaped last night. Overhead was the inevitable Bristol, a Mercian one, evidently keenly interested in this dragon and a little puzzled by it. The pilot circled round several times and came a little lower. Then, evidently drawing the right conclusion, he flew off to look for other news. Airmen admit that dragons and tanks are hard to detect when they are not moving, unless the track has been spotted or there is some other reason for suspecting their presence.

Learning that there was nothing more to be seen on to the north, I retraced my steps and went to Dirty Corner, where I found Wessex cavalry covering the retreat of the other arms, supported, as I found a little later, by some serviceable dragon-drawn 18-pounders. Both men and horses had had a pretty miserable time, wet weather, rations late, and one squadron had not been allowed to unsaddle for 18 hours.

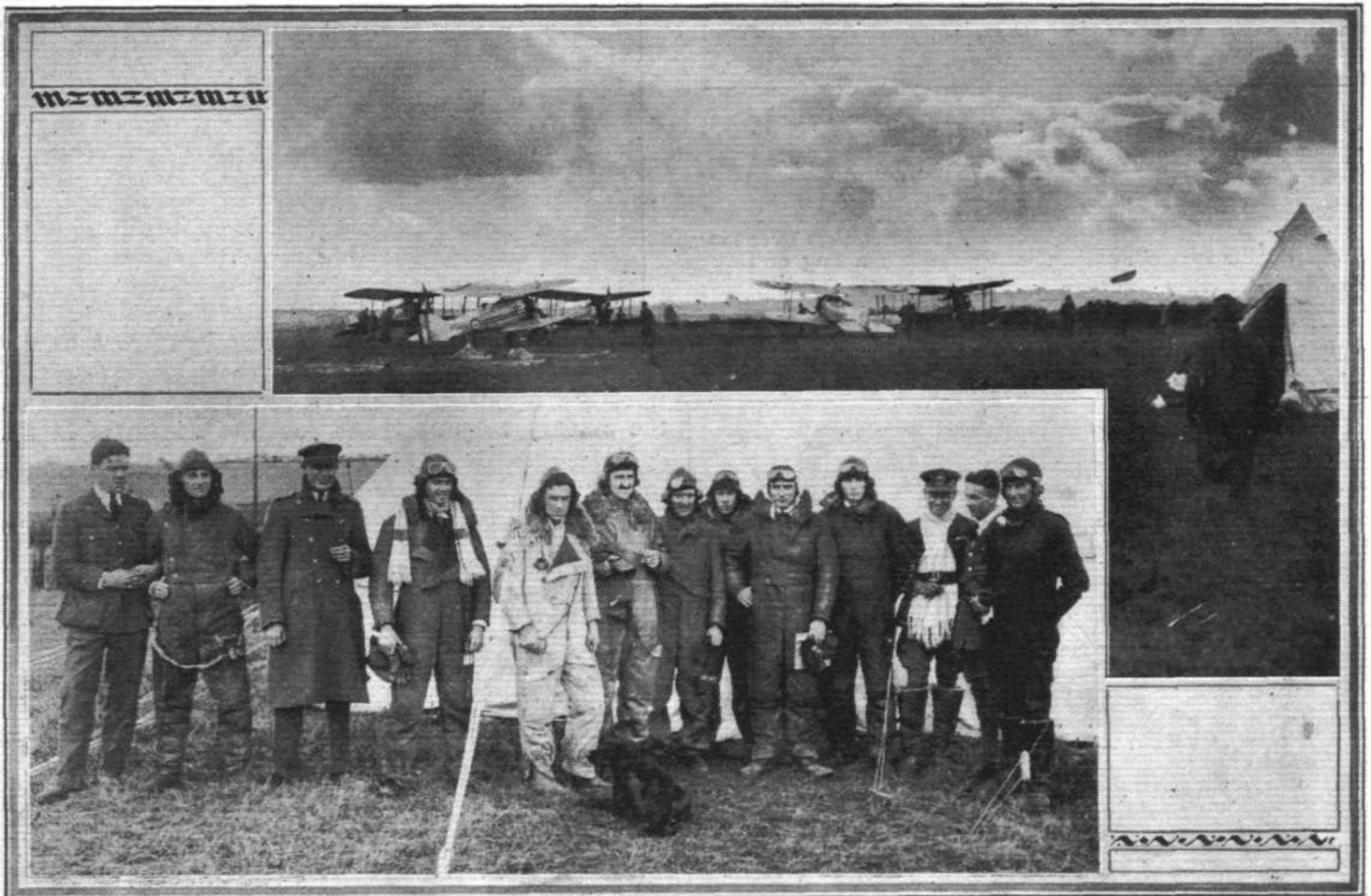
✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱
 Hurrying for
 Cover : Dragon
 and gun running
 for cover at the
 approach of air-
 craft.
 ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱

While I was there, orders arrived for this brigade of cavalry to assemble in the village of St. Mary Bourne, and move back, their task having been performed. The assembling, however, was the dangerous proceeding. Hitherto they had all been safely hidden under trees. But when they moved out, the airmen saw them, and a squadron of 7th Hussars, which has grey chargers, and had not plastered them with khaki die, attracted most attention. Two flights of No. 25 were called up, and I watched them circling and diving onto the cavalry. The casualties must have been considerable, as one of the victims ruefully admitted to me when I met them. Unfortunately, one of the Jaguars struck work just then, and the pilot had to land on very rough ground. The Grebe was badly damaged, but the pilot escaped with minor injuries. The same day two Grebes of No. 56 forced landed behind the Mercian lines. One crashed, the other got down safely, and the pilots were taken prisoners. I think those were the only crashes during manoeuvres, though there were a few forced landings.

The Wessex aircraft were very busy that day investigating Mercian movements to the south. At 15.00 hours they discovered and attacked Mercian cavalry as they crossed the Test at Mottisfont, north of Romsey, and inflicted 50 casualties. The regiment concerned was the 10th Hussars, and I hope Prince Henry was duly impressed. He was fated to get things hotter on the morrow. Near Litchfield on the north, a very long Mercian column was bombed by two Wessex flights, and later the whole of No. 39 and two flights of No. 56 came up and paid this target very serious attention. I very much wish I had been there to see the D.H.9A's attacking a column on the march, but correspondents had to consider a daily press conference in H.Q. camp, and subsequent telegraphic business.

The Battle of Quarley

Thursday, the 24th, was another lovely day—September at its very best. When we woke there was not a sign of a soldier in a cap in Andover. All Wessex had fallen back



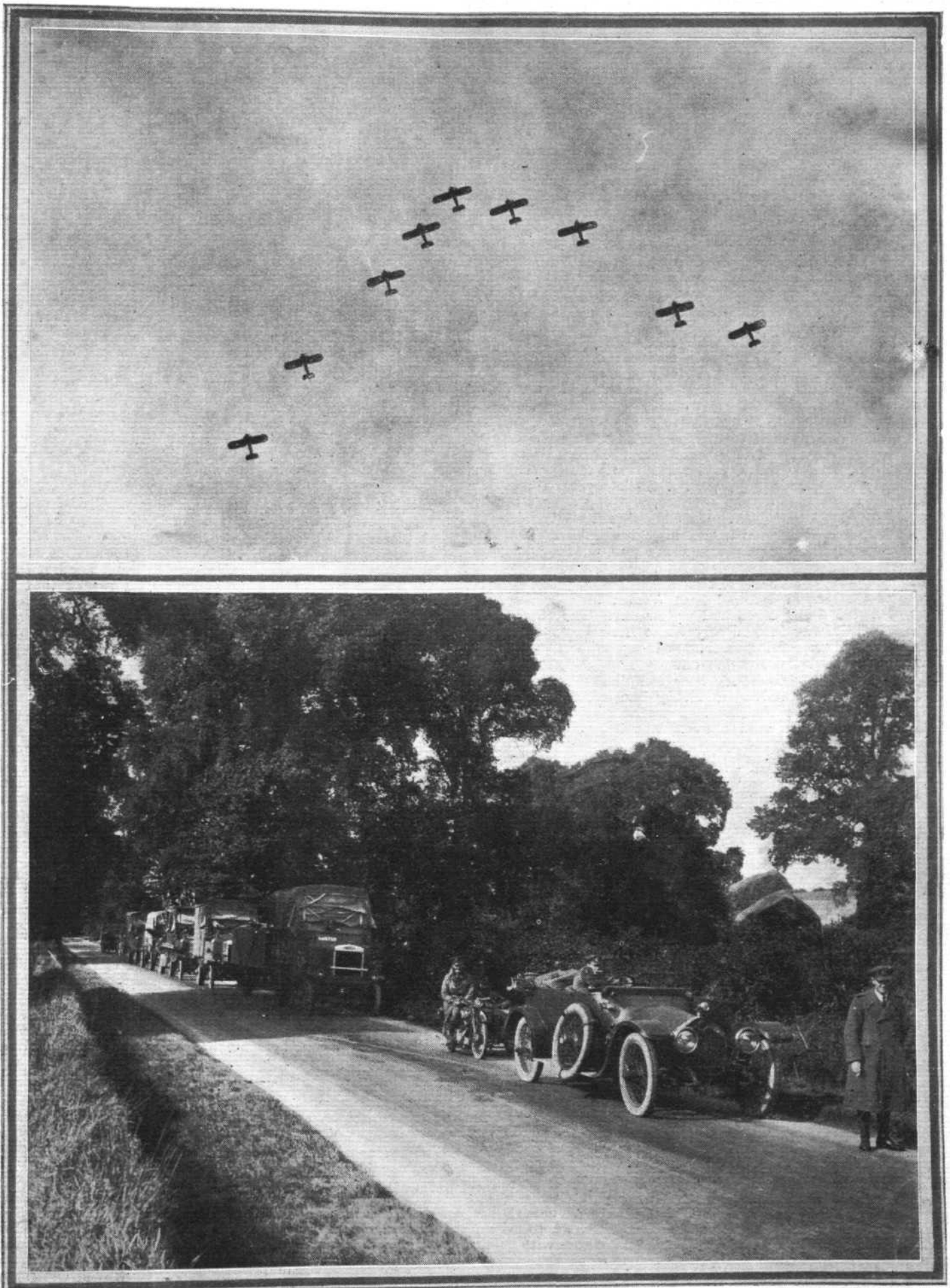
"THE CUCKOOS" (No. 25 FIGHTER SQUADRON): Above, "Off in Eight Minutes." Pilots running to their Grebes on receipt of urgent order. Below, the officers (from left to right), F/O W. Yearsley, F/O L. E. Maynard, F/O (Adj.) R. H. Sheppard, P/O R. F. A. Ford, F/O A. E. T. Bruce, F/Lt. W. E. G. Mann, D.F.C., F/O P. J. Clayson, M.C., D.F.C., Sergt. J. E. Brown, F/O K. K. Brown, P/O J. D. Keary, P/O S. E. Bullock, P/O G. P. Chamberlain, Sq./Ldr. A. H. Peck, D.S.O., M.C.

Proceeding along the line of retreat towards Andover, I found some dragons with their guns at Knight's Enham. They were having a peaceful time under cover of the haystacks in a stubble field, and I spent some time with them. The officers seemed surprised that the Mercian forces had let them break off the engagement and get away with so little interruption. The infantry were now well to the rear (it was 13.00 hours), and the rearguard was being drawn in. The only interference of any sort had been the attack by No. 25, which I had witnessed. In fact, there was practically no fighting on the ground all that day. Doubtless, General Chetwode had his reasons, and equally doubtless the retreat of the northern Wessex force had been skilfully conducted; but all the same, time was of the utmost importance to both sides, and I was surprised that General Chetwode with two divisions in the line and another coming up on his left, three Bristol squadrons to watch the Mercian movements, and excellent visibility, should have permitted General Godley to break touch and retire at his leisure to a defensive position to the west of Andover, without risking something in an attempt to hamper his retreat. Perhaps the fatigue of the 2nd Division accounted for this inactivity.

to a line to the west, the left flank at Chute, the right at Grateley. On the other hand, the steel helmets of Mercia did not appear in the town until mid-day. We tried to imagine the feelings of the burghers of Brussels when the Hun was at the gate. But the day was too joyous, the campaigning too interesting, and moreover "manoeuvre colds" were beginning to react to the continued application of ultra-violet rays. It was impossible to feel depressed. The night, of course, had been busy, for the Mercian column started to advance at midnight, and Nos. 2 and 4 Squadrons sent out night-flying machines in order that the drone of their engines might drown the noise of tanks, etc., on the march. By 8 a.m. the Mercian 2nd Division was in position to attack the Wessex left at Chute, the 4th Division in the centre was still east of Andover in corps reserve, while the 1st Division was opposite Grateley with the Mercian cavalry and some tanks out on its left.

A radical change in the general plan had now been decided upon. Manoeuvres were to cease at 17.30 hours on the 24th, instead of at 12.00 hours on the 25th. This, of course, gravely affected the plans of both generals. Mercia had now its time for overwhelming General Godley, before the

"FORM SQUADRON!"



No. 56 Fighter Squadron off on a mission, and, below, Air Force Mobility : No. 56 Fighter Squadron (Wessex) changes camp

arrival of Wessex reinforcements from the north, cut short by 18½ hours. The Mercians had not yet engaged the Wessex forces and pinned them to a line. It was still open to General Godley to retreat again to his final position along the Avon, and had he done so General Chetwode would not have come up with him again before the cease fire was sounded. There would, in fact, have been no final battle at all, manoeuvres would have fizzled out in the tamest fashion, and Mr. Thomas Atkins would have been justifiably fed up. But General Godley evidently believed that he could hold the Chute-Grateley line till 17.30 hours on the 24th, so he offered battle there.

I thought it would probably be most interesting to see the Mercian cavalry and tanks attempt to turn the Wessex right flank, so motored down the Andover-Salisbury road. Soon I passed detachments of the Black Watch holding the hedges along the road, which showed that the 3rd Infantry Brigade of the 1st Division were up there. About 5 miles south-west of Andover, over the fields and lanes to the right of the road, I caught sight of No. 56 Squadron worrying some Mercian troops like hawks attacking a wounded wolf. The red Grebes circled and dived without mercy until the Coldstream Guards (I met them afterwards and talked about it with their air umpire) must have suffered very heavy casualties indeed. At the village of Over Wallop I found what I had been looking for—troopers of the 13th/18th Hussars and a cyclist of the 10th Hussars. So General Chetwode was using his cavalry to turn the Wessex right. But where were the Mercian tanks? So far they had not been in action at all. I wanted to see how General Godley was meeting this threat to his flank, so I went up a lane to Grateley where the Coldstreams were resting after their ordeal. In front—that is, to the west—was the considerable eminence of Quarley Hill, with a thick copse on top. It dominates this part of the country, and lay almost in the centre of the Wessex line. On the summit all the foreign attachés were congregated, watching the battle. The two lines were close together here, and I had not long left the helmeted Coldstreams before I found myself among the men in caps. At a corner where four lanes crossed just 1½ miles west of Cholderton I found four Wessex tanks. One was out of action flying a red and yellow flag. The others had crashed their way into a very dense little coppice by the roadside, and were firing their machine guns in the direction where I guessed the Mercian cavalry must be moving up. It was interesting to notice how completely the monsters had concealed themselves, and they had left the minimum of track marks in the lane. I wondered whether those marks were visible from above. The hedges were thick, and I could not see the enemy, so I went on towards Cholderton. An officer advised me to pull in to the side, and hardly had I done so when five Mercian tanks rumbled up the steep lane, all out of action and prisoners. When they had passed I went into the village and heard the story. The headquarters of the Wessex 3rd Division were there, and these five tanks, who recognise no lines and no no-man's-land, had raided it. For a time the G.O.C. and his staff were in grave danger. "Disorganised" was how the official Wessex narrative described the situation; but I fancy the G.O.C. and his staff were all under the tables at their H.Q. in the village inn. But Wessex tanks were at hand, and they hurried to the rescue. A lively dog-fight occurred in the tiny village, in which the Wessex tanks, though a bit mauled, had the best of it and took the raiders prisoner. I sat on the village bridge a while and chatted to an A.P.M. of the Air Force. Still I could not tarry long, as I had to learn the further fortunes of General Chetwode's turning movement. He had used tanks and had met with serious losses, and I knew his cavalry brigade were in it. I knew also that General Godley had met the movement with tanks, and I wanted to see what his cavalry was doing. I did not at that moment know the full extent of the Mercian losses in tanks. I learned later that five of them emerged from cover near Cholderton and proceeded in line ahead (which leaves only one track mark) to attack a wood held by Wessex cavalry. They showed in the open for only five minutes, but they did not escape the Wessex aircraft. Two flights of No. 56 were on them at once, and bombed them so thoroughly that all five tanks were put out of action by the umpires. I think I saw that incident from a distance. At any rate I saw six red Grebes attacking a target far away from where the Mercian cavalry were.

I turned west to Amesbury, and soon found that the battle had not yet got so far west. On the way I sighted Boscombe on the plain, where No. 56 had been encamped the night before, though I had been informed that they had moved farther back. But while I was in Amesbury their transport went

through the town in a great hurry, travelling in the direction of Tillshead. One dismantled Grebe hitched to the tail of a lorry made a rather forlorn sight, but I admired the way in which the Hucks starter trundled along among the other vehicles. I gathered that they had been shot up at Boscombe, but I did not hear the details of the story. Certainly the column gave a good impression of the mobility of the Royal Air Force.

Coming back towards Andover, I found the Wessex force still standing on the same line, while Mercian infantry opposite were still affording quarries to the restless Grebes of No. 56. Near Amport Wood I saw two flights each circling over and diving on to two separate targets, so close together that the circumferences of the circles seemed to touch. That morning No. 25 Squadron was active up in the northern sector, which was why I did not see it. Near Tidworth Down two flights attacked a Wessex anti-aircraft gun position, and with the loss of one Grebe (not an actual loss) put the guns out of action. The railway stations at Salisbury, Westbury and Devizes were bombed by No. 207, while the Mercian Bristols photographed the whole of the Wessex line early in the morning. Of course, the Bristols on both sides continued their untiring reconnaissance until the end of the battle.

As I drove from Weyhill to Andover the road was stiff with a brigade of the 4th division marching out to the fray, followed by artillery; and there a Wessex Bristol departed from its usual custom so far as to dive and attack them. It was then past 15.00 hours, and obviously there would be no time for Mercia to overwhelm Wessex by 17.30 hours. The former took the village of Chute and also Quarley Hill, but the Wessex Territorials were about to launch a counter-attack when the stand-fast was sounded.

Some Reflections

I think everyone who studied the air work during those three days must have been profoundly impressed. In the first place, the Army Co-operation squadrons showed that they could reconnoitre and send in reports in very vile weather. Their patrol work was unceasing, and I do not think it could have been more effective in any way. I repeat that the aircraft never failed to report any movement of importance on either side. The W/T and R/T worked well. One could see that by observing the promptitude with which the Grebes always answered the calls of the Bristols. Both sides attempted to intercept the other's messages, and met with a certain amount of success, especially on the first day. After that some form of code was used.

A considerable number of machines were put out of action by the umpires as the result of ground fire. In the final narrative compiled up to 17.00 hours on the 24th, the Mercian side stated that during the three days' operations their air force sustained losses to the extent of five Bristols, four Grebes, and six bombers. This, however, must be an error, for I know as a fact that on the 24th alone 17 Mercian machines were judged to be shot down or destroyed by attacks on their aerodromes, to say nothing of the air raids on Odiham aerodrome. It is open to anyone to doubt whether the losses from ground fire would be actually so great in real war.

But I should like to ask, if air combats had been permitted what chance would the Bristols, who mostly worked on a lone hand, have had against the Grebes who were always in flight and often in squadrons? It is certainly time that army co-operation squadrons should be equipped with a more modern machine.

As for the smartness of the Royal Air Force, my colleague saw No. 25 Squadron waiting for orders on its aerodrome one morning, the machines out ready and the pilots in their flying clothes even to their gloves. The orders came, and in exactly eight minutes the three flights were in the air. Smart work that!

But the main thing which struck me was that the army is appallingly short of aircraft on which it can count to work with it when the next war breaks out. Sir John Salmond's air defence force is still too small, though it is growing. It would be absolutely impossible for the C. in C. Air Defences to lend the army two squadrons of fighters and two of bombers in war time. The army would have to do the best it could with its four squadrons, and perhaps one special flight. When only four army divisions took the field that air force had to be temporarily doubled. What would happen if the whole British Army were mobilised, and the borrowing of squadrons suddenly became an impossibility? The prospect is appalling to contemplate. The Admiralty has done the wise thing by insisting on so many flights and paying for them. The sooner the War Office follows that example, the sounder we shall all be able to sleep in our beds o' nights.

THE BRITISH SCHNEIDER CUP TEAM SAILS FOR AMERICA

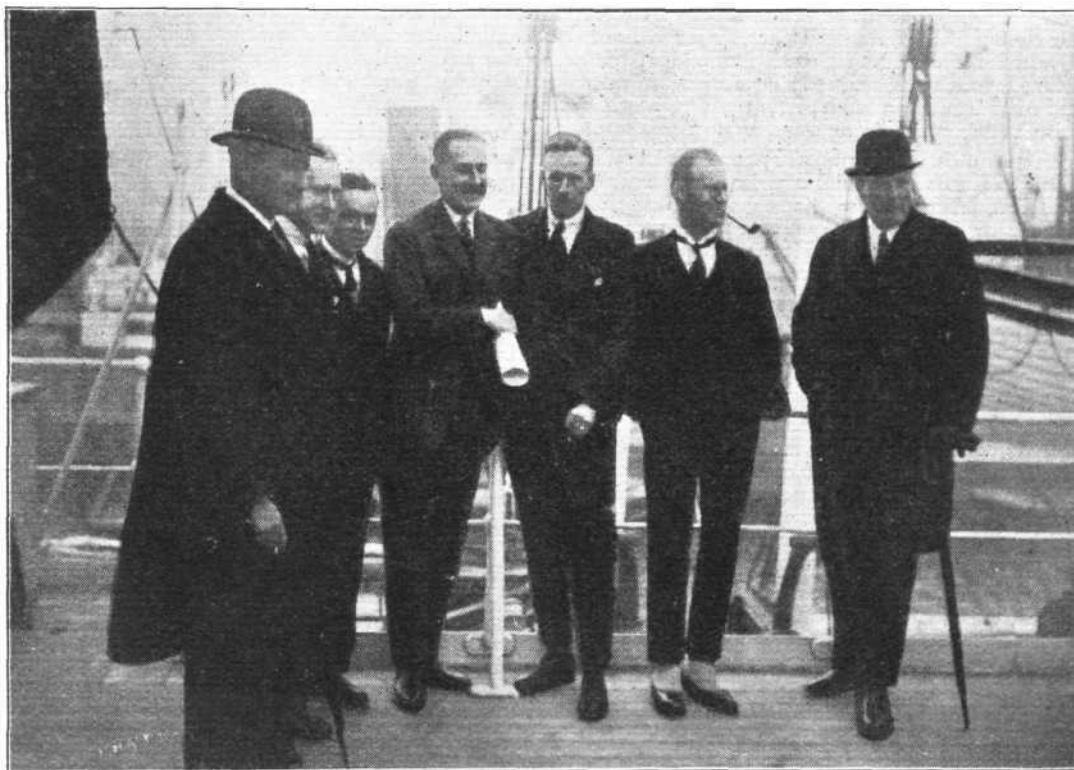
"Good-Bye and Good Luck"

"REMEMBER to put out the cat!" This was the last message received from the British Schneider Cup team which left for America on the Atlantic Transport Company's *Minnewaska* on Saturday of last week, September 26, and was scribbled on a bit of paper and thrown overboard by Mr. Bert Hinkler, one of the three British pilots, and retrieved by Mr. John Lord, of Avros. The scene was King George V Dock whither quite a large party had motored from the Royal Aero Club to wish the departing team good bye and good luck.

The Royal Aero Club held a reception in the dining room of the *Minnewaska*, at which success to the British team was drunk in the proper beverage. Commander Harold Perrin, Secretary of the Royal Aero Club, read telegrams expressing good wishes from the Secretary of State for Air, Sir Samuel Hoare, His Grace the Duke of Sutherland, Sir Charles Wakefield, Bart., and Lord Edward Grosvenor. Lieut. Col. J. T. C. Moore-Brabazon then proposed the toast to the departing British team. No other international aviation event, he said, attracted so much interest from the general public as the Schneider Cup seaplane race, which was very right and proper in view of our position as an island empire. This year we really were seriously challenging the Americans,

for participation in the race, and he was extremely glad to see that Sir Geoffrey Salmond was present on this occasion to wish the team success on behalf of the Air Ministry. He also mentioned the valuable contributions towards expenses made by the Shell-Mex Company, the Fairey Aviation Company, Short Brothers and others, and said they owed a debt of gratitude to the Atlantic Transport Company for their very generous offer to transport free of charge the British machines to America and back. He then proposed the toast of the British team and asked Air Vice-Marshal Sir Geoffrey Salmond to second it.

Sir Geoffrey Salmond said they owed a debt of gratitude to the two designers, R. J. Mitchell and H. P. Folland, for having "produced the goods," and he felt certain the machines represented the best it was possible to produce in this country. They were not over sanguine as to winning the race, and fully realised what they were up against. However, he was sure everyone would do his level best. He thought it must be interesting to the pioneers present, such as A. V. Roe and Colonel Moore-Brabazon, to contemplate the speeds it was now expected to attain, and to compare them with their own early efforts. He was pleased to second the toast: "The British Team," which was duly honoured.



SOME OF THE MEMBERS OF THE BRITISH SCHNEIDER CUP TEAM: Air Vice-Marshal Sir Geoffrey Salmond (left) and Lieut.-Col. Moore-Brabazon (right) were among those present to wish success to the British team. In the group are seen: Mr. Mitchell (designer of the Supermarine-Napier S.4), Mr. Bert Hinkler (reserve pilot), Capt. C. B. Wilson (captain of the team), Capt. Biard (pilot of the S.4), and Mr. Folland (designer of the Gloster-Napier III). Capt. Broad (pilot of Gloster III) arrived on board too late to be included in the group.

and were going out with the strongest team we had been able to get together. They were not going to have an easy time of it, and realised what they were up against, having seen the American seaplanes at Cowes in 1923, but they would do their best. He was very glad to see among those present the American Air Attaché, Commander Richardson, and Mrs. Richardson, and referred to the excellent sportsmanship of the Americans in declaring "no race" last year, when claiming a walk-over would have vastly increased the chances of the United States.

Col. Moore-Brabazon also referred to the fact that this year's entry had been a co-operative effort, and thought that the team going across was representative of all that was best in the British aircraft industry. They were particularly grateful to the Air Ministry for having ordered the racing seaplanes, and then handed them back to the constructors

Commander James Bird said the less said before the event the better, and the time for making speeches would be after the race. He expressed the hope that a British machine would win the race.

Captain C. B. Wilson, captain of the British team, read telegrams from the employees of the Gloucestershire Aircraft Company, from the staff at the Brough air station, and from Imperial Airways, Ltd., and then in a brief speech he referred to the committee which he had formed to deal with any questions that might arise, and which, with himself as chairman, would consist of Major Buchanan (Air Ministry), Lieut. Col. M. O. Darby, Mr. H. P. Folland (designer of the Gloster-Napier III), Mr. R. J. Mitchell (designer of the Supermarine-Napier S.4), and Mr. H. T. Vane (managing director of the Napier company).

In response to a clamour for speeches, Capt. Biard and

Mr. Hinkler said they felt with Commander Bird, that the less said before the event the better, but they greatly appreciated the honour of having been chosen to represent Great Britain in the race for the Schneider Cup. Capt. Hubert Broad was late in getting on board, and thus his views could not be ascertained.

The reception then came to a finish, and the party had to leave the ship, as time for departure was drawing near. Most of the party, however, waited on the quay until the *Minnewaska* sailed, and the time was spent in good-humoured chaff. The departing team amused themselves by throwing coins to those waiting on the quay, and in the scrum the Secretary of the Royal Aero Club did rather well. Mr. A. V. Roe, who had at the last minute decided to accompany the team, launched some very successful paper gliders, and then the gangway was brought ashore and tugs took the *Minnewaska* in tow and slowly proceeded towards the river, the assembled company giving the British team a rousing cheer.

The British Schneider Cup Team

Most of the members of the British Schneider Cup team will be well known to British readers of *FLIGHT*, but for the benefit of American readers, many of whom will probably see a good deal of the British team during the next few weeks, a few words concerning those of its members travelling on the *Minnewaska*, may be of interest, and we trust the following brief notes, which may be regarded as an introduction to our American friends, will serve as a useful "Who's Who."

Captain C. B. Wilson, M.C., who is captaining the British Schneider Cup team, is the Royal Aero Club's representative, and, incidentally, is one of the earliest members of the Club. Captain Wilson joined the 10th Hussars, with whom he served in India and later on the Western front in 1914. In 1915, he transferred to the Royal Flying Corps, and went through a course of training at the Central Flying School at Upavon. Captain Wilson helped to form the 15th Squadron of the R.F.C., with whom he went to France in 1915. He was shot down in 1916 and remained a prisoner of war until the end of hostilities. Apart from his war service, Captain Wilson has always been interested in gliding, and he entered a glider for the 1922 meeting at Itford. He also presented a prize at this year's light 'plane meeting at Lympne. He is a member of the racing committee of the Royal Aero Club.

Capt. H. C. Biard, who will pilot the Supermarine-Napier S.4, is one of our earliest pilots, having obtained his pilot's certificate as long ago as 1912, at the Graham White School at Hendon. It is doubtful whether there is another pilot in England to-day who obtained his ticket so long ago and who is still flying regularly. During the war, Captain Biard served with the Royal Naval Air Service, and since the war he has been employed as chief test pilot to the Supermarine Aviation Works. It will be recalled that it was Capt. Biard who, in 1922, won the Schneider Cup Race at Naples on a Supermarine-Napier flying boat, and in the following year Capt. Biard was the only British competitor to complete the course at Cowes, when the Cup was won by the American aviator, Lieut. Rittenhouse.

Capt. Hubert Broad, who will pilot the Gloster-Napier III., learned to fly in 1915, and joined the R.N.A.S. at Dunkirk. He later returned to England and joined 46 Squadron of the Royal Air Force. He went to France with his Squadron and was wounded in an air fight over Cambrai. Responsible for bringing down six enemy aircraft, Capt. Broad returned home just before the Armistice to act as an instructor in England, and was awarded the A.F.C. Following upon the conclusion of the war, he joined A. V. Roe & Co. for a time, and then paid a visit to the United States, where he flew a number of different types of machines. On his return, Capt. Broad joined the De Havilland Aircraft Company, with whom he has been ever since. As chief test pilot to this firm, Capt. Broad has flown all manner of types, from large commercial aeroplanes to small single-seater light 'planes, and he has flown in all something like 75 different types of aero-

planes. It may be recollected that Capt. Broad was nominated last year as pilot of the Gloster machine entered for the Schneider Cup Race, and was piloting this machine when, owing to a damaged float, the machine sank, Capt. Broad having a narrow escape.

Mr. Bert Hinkler came to England from his native country, Australia, during the War, and did excellent work in an Australian Squadron. After the War he bought an Avro "Baby" on which, in 1920, he started to fly to Australia. His first "hop" was to Turin, non-stop, a distance of 700 miles, and there he was advised that owing to the troubles in the East, it would not be advisable to fly through Iraq, and so he returned to this country. He later had his machine sent to Australia and flew from Sydney to Bundaberg, a distance of 800 miles, non-stop. On his return to this country he became chief test pilot to A. V. Roe and Co., Ltd. It may be mentioned that among his many achievements, Bert Hinkler was the first pilot to take the 1,000 h.p. Avro Aldershot into the air. Although Mr. Hinkler has not before had experience of really fast racing machines, he has proved during a short period of practising at Felixstowe that he has the delicate touch required to handle these modern projectiles, and should the opportunity present itself, there is no reason to doubt that he will do well in the Schneider Cup Race.

Mr. H. P. Folland, who is chief engineer and designer to the Gloucestershire Aircraft Co., was at the Royal Aircraft Factory (now the Royal Aircraft Establishment), at Farnborough, before the War, where he was assistant designer to Capt. Geoffrey de Havilland. He thus had a good deal to do with the famous B.E. machines, and later on with the design of the S.E.5a, which turned out to be one of the best fighting scouts in the Royal Air Force, and which is still used for sky-writing in the United States and elsewhere. In 1917 Mr. Folland joined the British Nieuport Company, for whom he designed the Nieuport "Nighthawk," which was ordered by the Air Ministry in vast quantities for the 1919 programme, but owing to the Armistice the machine was never used in large numbers by the R.A.F. In 1921 Mr. Folland joined the Gloucestershire Aircraft Co., with whom he has remained ever since, and in six weeks he designed and built the Gloster I ("Bamel"), which won the Aerial Derby of 1921 on its first flight. The same type of machine or its later development won the Aerial Derby in both 1922 and 1923. As chief designer to the Gloucestershire Aircraft Co. Mr. Folland has produced a variety of types, among which may be mentioned the Gloster "Grebe," with which several squadrons of the R.A.F. are equipped, and the "Gamecock" and the "Gawcock." For this year's Schneider Cup Race Mr. Folland has produced the Gloster-Napier III.

Mr. R. J. Mitchell was born at Stoke-on-Trent in 1895, and there served his apprenticeship to engineering with Kerr, Stuart and Co., Ltd., later becoming assistant engineer. In 1917, Mr. Mitchell commenced his association with the Supermarine Aviation Works, and in 1920 was appointed chief engineer and designer. The Supermarine amphibian flying-boat which won second prize in the Air Ministry competitions at Martlesham in 1920 was produced by Mr. Mitchell. Other milestones marking the progress of his career since his association with the industry are: the Supermarine "Sea Lion," winner of the Schneider trophy in 1922; the Supermarine "Seagull," used in large numbers by the Air Ministry as deck landing naval reconnaissance machines; the Supermarine "Sea Eagle," the first civil amphibian flying boat; the Supermarine "Swan," the first twin-engined amphibian flying boat designed for civil purposes, and the Supermarine "Sparrow" light aeroplane. The Supermarine "Southampton," the latest type of boat built for the Air Ministry, was also designed by Mr. Mitchell, and the tribute of the Secretary of State for Air after a recent flight in this boat that it was "one of the best flying-boats that Great Britain has ever had," was not undeserved. Mr. Mitchell has, of course, also designed the Supermarine-Napier S.4., which is entered for this year's Schneider Cup Race at Baltimore.

R.A.F. Medical Service Appointments

THE Air Ministry announces:—His Majesty the King has been graciously pleased to approve of the following appointments: Air Vice-Marshal David Munro, C.B., C.I.E., M.B., M.A., F.R.C.S. (E.), to be an Honorary Surgeon to His Majesty; Group-Captain Hardy Vesey Wells, C.B.E., to be an Honorary Physician to His Majesty.

French Trans-Atlantic Machine Crashes

THE Potez machine on which the French pilots Tarascon and Coli intended to fly from Paris to New York was destroyed

in an accident on September 26. Tarascon, accompanied by the pilot Favreau, set out in the machine on September 25 for an endurance flight over the Etampes-Chartres-Orleans-Etampes circuit, in an attempt to beat the world's distance record, and also with the object of testing qualities of machine and engine. After having covered some 1,200 miles, they flew into a storm in the early hours of the second day, and coming down low to ascertain their position the machine collided with a tree and crashed in a wood at St. Lucien. The machine caught fire, but both pilots managed to escape with more or less minor injuries.

FARTHEST NORTH BY AIR

Captain Roald Amundsen's Story of the Flight

At the Central Hall, Westminster, Capt. Roald Amundsen, the famous Norwegian explorer, told on Monday, September 28, to a very large audience, his own story of the flight to the North Polar regions in two Dornier flying-boats with Rolls-Royce engines.

Capt. E. R. G. R. Evans, C.B., D.S.O., R.N., who was second in command to Scott in the expedition to the South Pole, was in the chair. In introducing the lecturer, Capt. Evans pointed out that Roald Amundsen came of old Viking stock and that his ancestors of many hundred years ago had travelled far and wide in their small boats. If, Capt. Evans said, one asked any British school-boy, "Who discovered America?" the answer would usually be "Christopher Columbus." As a matter of fact, this was incorrect, since the first man who reached the American continent was Amundsen's compatriot, Leif Ericsson, who actually reached the North American continent nearly 500 years before it was discovered by Columbus. Capt. Evans briefly recalled Amundsen's distinguished career in Arctic and Antarctic exploration, and then called upon him to give his lecture.

Before commencing his lecture Capt. Amundsen thanked Capt. Evans for his very kind words of introduction, and said that he particularly appreciated Capt. Evans's remarks about the real discovery of America. To get a British naval officer to admit that America was discovered by a Scandinavian was praise indeed. (Laughter.)

As the brief facts of the now famous flight by Amundsen and his companions are already known to readers of *FLIGHT*, it is not proposed to follow step by step Capt. Amundsen's story here. It will be recalled that the original intention of the expedition was to fly, if possible, from Spitzbergen across the Pole to Alaska. Capt. Amundsen, however, stated in his lecture that, not only did they have small hope of doing this, but they were not even very optimistic of reaching the Pole itself, owing to the limited cruising range of the seaplanes. The attainment of the Pole itself was in his view a secondary consideration, as he personally had always regarded Peary as being the first man on the spot. Rather was he anxious definitely to settle whether or not land was to be found between Spitzbergen and the Pole. There were those who maintained that no land would be found, notably Sverdrup who based his views on observations of the ocean currents, but they could not be quite sure until they had definitely settled the question by personal observation.

One remarkable fact was brought out by Capt. Amundsen's lecture, namely, that both at the start from Spitzbergen and when starting from the Polar regions in the return flight, the take-off had to be effected from the ice and not from the sea. Since, so far as we are aware, the Dornier flying-boats were not fitted with special runners, but simply relied on their fairly flat bottoms, this feat is rather remarkable, the more so as the machines were heavily over-loaded. Capt. Amundsen stated that the maximum permissible load given them by Herr Dornier was $2\frac{1}{2}$ tons, but actually when leaving Spitzbergen the N. 25 was carrying a good deal over three tons. That the Dorniers managed to get off was a tribute not only to the machines, but also to their Rolls-Royce engines.

It will be recollected that after nearly reaching 88° N. lat., it was discovered that nearly half the petrol had been consumed. While looking, not for a suitable place to alight, but for a place where a landing might be at all possible, the rear engine of the N. 25 began to misfire, and an immediate descent was inevitable. In graphic language, Capt. Amundsen related how Riiser-Larsen "planted" the N. 25 in a small strip of sea, and how the machine did not come to rest until its nose all but touched the far end, the wings having missed the high ice banks on each side by a matter of inches. Intensely dramatic was the lecturer's account of the three weeks or so spent in attempting to prepare starting tracks for the N. 25, and the herculean efforts of the crew to save their machine. The other machine, the N. 24, had come down quite close

to the N. 25, without either being aware of the other's presence, although, after a time, communication between the two was established, and the crew of the N. 24, whose machine had been seriously damaged at the start from Spitzbergen, and which was in constant danger of sinking, joined forces with that of the N. 25. Although there were now six men hard at work, it is little short of astonishing how those six, weakened by terrific toil and short rations, were able repeatedly to turn the heavy machine around and to move it about from place to place each time a starting track had been prepared. It is not difficult to understand the feelings of the explorers when, time after time, all their efforts were wasted by the pack ice spoiling the painfully prepared track, and jeopardising the safety of the machine. During those days of hard toil and suspense, a large ice hummock with a striking likeness to the Sphinx, came to be looked upon by the crew as their particular enemy, and more than once they shook their fists at the "Sphinx," and assured her that they would defy her yet, which ultimately, fortunately, they were able to do.

No less than six starting-tracks were prepared, the first five of which were spoiled by the movements of the pack ice, but, ultimately, they managed to get away and to reach Spitzbergen safely. Some idea of the difficulties encountered was provided by Capt. Amundsen's list of tools which consisted of two small ice anchors, three knives, a boy scout's hatchet and the camera tripod! With these crude tools the party, he estimated, shifted something like 500 tons of ice, snow, and slush. Actually, towards the end, however, it was neither of these crude tools which saved the seaplane, but a pair of rubber boots. The ice was closing in on the machine and in their extremity, the only method they could think of for evading their enemy was for Lieut. Omdahl, who was the only member of the party to possess a pair of rubber boots, to run round the machine, jumping on the ice at any point where it threatened to pierce the sides of the hull. This strenuous exercise was kept up by Omdahl for hours on end, until at last in this manner several feet of ice must have been pushed under the machine and the danger ultimately averted. The sixth track prepared was, like the other five, some 1,500 ft. long, and wide enough for the ice hummocks on each side just to clear the wing tips. This track was prepared by the men trampling down the soft snow, which, fortunately, froze reasonably hard during the night, and enabled a start to be made the next day, the N. 25 having had a considerable amount of petrol transferred to her from the N. 24, and carrying the crews of the two machines.

The return journey to Spitzbergen was rather uneventful, but, as on the way out, a fog belt was encountered so that it was necessary for a couple of hours to fly without sighting the sun. Some anxiety was felt concerning the accuracy of the magnetic compasses, but after getting through the fog belt and being able once more to use the sun compasses, it was discovered that, in spite of the proximity of the North Pole, the magnetic compasses had, on the whole, been very accurate. Ultimately, the party reached Spitzbergen, but even so their troubles were not over, for an aileron jammed and made a forced descent necessary. In spite of the heavy sea that was running at the time, the pilot managed to alight safely and to taxi the machine up to the land, where a sealing boat was found which took them to King's Bay.

Capt. Amundsen, in conclusion, said that the result of the expedition might be summed up in the short sentence: Some 200,000 sq. kms. surveyed. He stated that in its present stage of development, he did not consider the aeroplane a suitable craft for Arctic exploration, owing to the necessity of having to alight on the ice, but he did not doubt that in a few years' time aeroplanes would be perfectly capable of doing the work. In the meantime, he had purchased the Italian semi-rigid airship, the "N. 1," and with this he hoped next year to be able to carry out his project of flying from Spitzbergen to Alaska, via the North Pole.

Air Ministry Golfing Society

THE autumn meeting of the Air Ministry Golfing Society was held at West Byfleet when several competitions were decided. Squadron-Leader C. H. Hayward had the best scratch score, with a round of 80. The prizewinners were:—

"Sutherland" Challenge Cup.—Gr. Captain R. P. Mills, 92—14=78; J. S. Robinson, 94—16=78.

Scratch.—Squadron-Leader C. H. Hayward, 80.

Best Nine Holes Out.—Colonel F. C. Shelmerdine, 43—5 $\frac{1}{2}$ =37 $\frac{1}{2}$.

Best Nine Holes Home.—Air Vice-Marshal Sir Vyell Vyvyan, 42—6=36.

36 Holes Scratch Aggregate (Summer and Autumn meetings).—J. C. Reid, 82+92=174.

36 Holes Handicap Aggregate (Summer and Autumn meetings).—Gr. Captain R. P. Mills, 79+78=157.

Eclectic.—Sir V. Vyvyan and Colonel Shelmerdine tied.

ITALIAN FLIGHT TO TOKYO ACCOMPLISHED

MAJ. THE MARQUIS DE PINEDO, Chief of Air Staff of Italian Military Air Service, has accomplished his historical flight of about 20,000 miles from Rome to Tokyo, *via* Australia. The flight, which was carried out on a standard Savoia S.16 ter flying-boat fitted with a 450 h.p. Lorraine-Dietrich engine, is in many ways one of the most remarkable aerial achievements of recent times, inasmuch as he was accompanied only by his mechanic Ernesto Campanelli, carried but a minimum of equipment, and relied throughout the entire journey on just the ordinary facilities existing at the various points of call—no special preparations for the flight, other than the individual assistance rendered by various authorities *en route*, having previously been made.

On the whole his aerial mount behaved splendidly throughout the trip, and that he trusted his Savoia-Dietrich combination is borne out by the fact that he made a flight of more than 600 miles across India, over more or less dry land—the S.16 ter is an ordinary flying-boat and not an amphibian. Only the weather was unkind to him, causing several delays.

The Marquis arrived at Kasumigaura naval air station, near Tokyo, at 4 p.m. on September 26, having proceeded from Shanghai on September 23 by way of Mokpo (Korea), Kushikino, Yamakawa, and Kagoshima. He was received by the Italian Ambassador and staff, and by many Japanese notables. The Japanese accorded him an enthusiastic ovation, both

at Kasumigaura and in Tokyo itself. He will stay in Tokyo about three weeks, during which time he will be well fêted by the Japanese, while the machine will be thoroughly overhauled and a new engine installed prior to the flight home—probably *via* China, Singapore, and India.

Since his arrival in Tokyo the Marquis has been promoted Lieutenant-Colonel in the Italian Air Force. Leaving Sesto Calende, Rome, on April 21, he flew along the following route: Brindisi, Lacos, Baghdad, Bushire, Charbar, Karachi (May 5), Bombay (May 8), Cocanada (May 11), Calcutta (May 12), Akyab (May 13), Rangoon (May 14), Tavoy (May 18), Mergui (May 21), Puket, Siam (May 22), Penang (May 23), Singapore (May 24), Batavia (May 25), Surabaya (May 27), Sumbawa (May 28), Kupang (May 29), Broome (May 31), Carnarvon (June 2), Perth (June 3), Bunbury (June 4), Albany (June 5), Israelite Bay (June 6), Adelaide (June 8), Melbourne (June 10), Sydney (July 16), Brisbane (August 6), Rockhampton (August 7), Townsville (August 10), Innisfail (August 11), Cooktown (August 12), Thursday Is. (August 13), Merauke, Dutch New Guinea, Dobo, (Aru Is.), Amboina (Molucca), Menado (Celebes) Mindano, Cebu (Philippines), Atimonan (August 23), Manila (August 27), Aparri (September 16), Tamsui (September 19), Shanghai (September 21), Mokpo, Korea (September 23), Yamakawa (September 24), Kagoshima (September 25), Tokyo (September 26).

ROYAL AIR FORCE FLIGHT FROM EGYPT TO NIGERIA

As foreshadowed by the Secretary of State for Air during the debate on Air Estimates in the House of Commons on March 12, the Air Ministry have made arrangements for the despatch this Autumn of a flight of three Service Aircraft from No. 47 Squadron of the Royal Air Force stationed at Helwan, from Cairo to Kano in Nigeria.

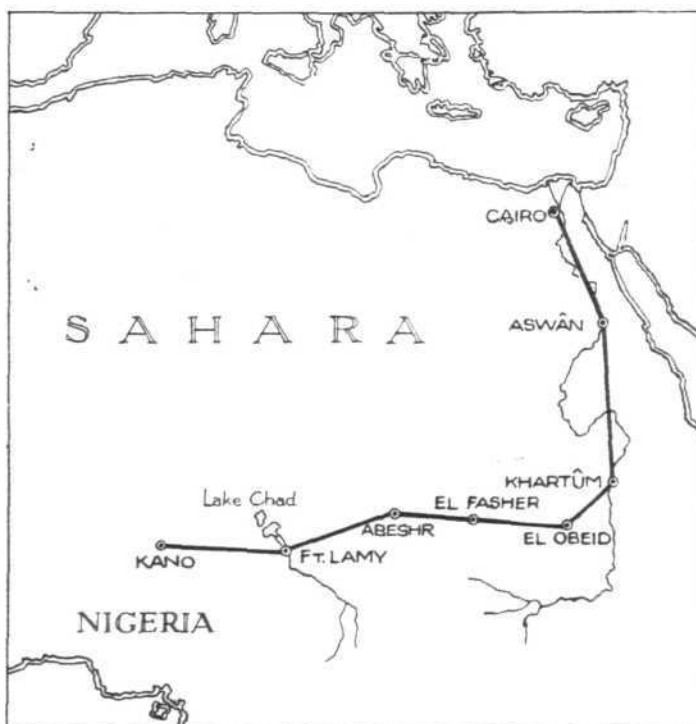
The flight is being undertaken for the purpose of gaining experience in long distance flights over tropical countries, where few facilities in the way of the ground organisation required by aircraft exist, and with the object of allowing Nigeria to see the capabilities of British aircraft.

The route to be followed will pass through the Sudan, French Equatorial Africa and past Lake Chad to Kano, the capital of Nigeria. The places to be visited for refuelling, etc., will be Aswan in Egypt, Khartoum, El Obeid, and El Fasher in the Sudan; Abecher and Fort Lamy in French Equatorial Africa; Maidugari and Kano in Nigeria.

The flight over French Equatorial Africa has been rendered possible by the courtesy of the French authorities who have kindly assisted in the arrangements made.

The organisation of the flight is being undertaken by Air Vice-Marshal Sir Oliver Swann, K.C.B., C.B.E., the Air Officer Commanding, Middle East. Squadron Leader A. Coningham, D.S.O., M.C., D.F.C., will be in command of the flight, which will start about the end of October.

No details of this flight have, as yet, been issued, and whether or not the D.H.9A's, with which this squadron is equipped, will be employed on this venture, remains to be seen. The accompanying sketch map will indicate the route to be taken, and will form an interesting comparison with that which we published in *FLIGHT* for January 22 last in connection with air activity in Africa.



Sketch map showing the route of the British Air Ministry flight from Egypt to Nigeria.

PAPERS AT BRUSSELS CONGRESS

At the Third International Air Congress to be held at Brussels from October 6 to October 10, a number of valuable papers will be read, among which the following will be of particular interest to British readers of *FLIGHT*. In the Medical Section, Group Capt. M. W. Flack, C.B.E., M.B., M.A., will read a paper on "A Stable Nervous Control in Relation to Flying Efficiency," and Lieut.-Col. C. B. Heald, C.B.E., will deal with "Some Medical Aspects of Air Transport." In the Meteorological Section, Lieut.-Col. E. Gold, D.S.O., F.R.S., will read a paper entitled "A Numerical Index of Meteorological Conditions on an Aerodrome or Air Route, for Comparison with Flying Statistics," and Capt. F. Entwistle, B.Sc., has chosen for his subject, "Meteorological Conditions in Relation to Choice of Aerodrome Sites and Civil Air Routes."

In the Science Section, Lieut.-Col. H. W. S. Ontram, C.B.E., Deputy Director of Aeronautical Inspection, will lecture on

"Strength Testing and Inspection of Aeronautical Materials, and Inspection of Civil Aircraft." Squadron-Leader F.C.V. Laws, will deal with "The Technical Side of Air Survey," and Mr. D. Sinclair with "The Development of Civil Aviation Wireless." Flight-Lieut. Reid will read a paper on "The Reid Control Indicator," and Colonel Bristow will tackle the subject of metal airscrews, while Mr. F. Handley Page will read papers on "The Prevention of Accidents in Commercial Aviation," and "Recent Developments in the Control of Aircraft by the Use of Slotted Wings." Mr. Roy Fedden, the designer of the Bristol Aero engines, will read a paper on "Air-Cooled Engines." Those interested in airships will find much food for thought in a paper on "The Trend of Airship Construction in Italy," by the famous Italian engineer, Signor E. Nobile, who designed the N.1 described in *FLIGHT* recently and now purchased by Capt. Amundsen.

THE ROYAL AIR FORCE

London Gazette, September 15, 1925.
General Duties Branch

Flight Lt. G. C. Rhodes is granted a permanent commission in rank stated (September 23). The following are granted short service commissions as Flying Officers with effect from, and with seniority of, September 14:—H. N. Hawker, C. R. Mason. The following are granted short service commissions in the ranks stated, with effect from, and with seniority of, September 12: Flying Officers (for seven years on the active list).—J. St. C. Arbutnot, (Lt., Indian Army, retired). Pilot officers (for five years on the active list).—A. W. L. C. Allen, H. T. Andrews, L. C. Barling, J. W. Bayes, G. Bradbury, A. M. N. David, W. G. du Bedat, T. O'N. East, D. C. Field, C. S. Horne, H. A. Howes, W. F. Lovering, C. R. McEvoy, R. C. H. Monk, C. V. Mossman, E. G. L. Russell, A. W. Shaw, W. H. Shorter, A. A. Smart, E. A. Swiss, A. E. Taylor, E. M. Thompson, F. B. G. Walker. Lt. P. N. R. Hallward, Border Regt., is granted a temp. commission as a Flying Officer on seconding for four years' duty, with R.A.F. (September 12). The following are transferred to the Reserve, Class A:—Flight Lt. C. F. Briggs (September 20); Flying Officer T. N. Stack (September 21). Flying Officer L. Hamilton, M.B.E.,

D.F.C., resigns his permanent commission (September 19); Flying Officer A. Malone resigns his short service commission (September 23). The following relinquish their short service commissions on account of ill-health (September 23):—Flying Officer F. R. Lines, Pilot Officer on probation D. M. Tyringham. Pilot Officer C. A. E. S. Kregor is removed from the service (September 26). Gazette May 19, 1925, regarding Lt. J. E. Hewitt, R.A.N., is cancelled.

Accountant Branch

Flying Officer A. B. Holt is dismissed the service by sentence of General Court-martial (August 17).

Medical Branch

The following Flying Officers are granted permanent commissions in rank stated (September 23):—S. G. Gilmore, R. H. Stanbridge.

Reserve of Air Force Officers

C. R. McMullin is granted a commission in Class A, General Duties Branch, as a Flying Officer on probation (September 22). The following Flying Officers relinquish their commissions on account of ill-health (September 23):—G. G. McHardy, A. E. H. Roberts.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Group Captains: C. T. Maclean, D.S.O., M.C., to R.A.F. Depot, pending posting overseas; 16.10.25. C. E. H. Rathborne, D.S.O., to Station Commandant, Basrah, pending taking over command; 22.9.25.

Wing Commanders: R. E. C. Peirse, D.S.O., A.F.C., to Air Ministry, for Air Staff duties; 15.9.25. H. R. Nicholl, O.B.E., to R.A.F. Depot, attending Staff Course at Royal Naval College, Greenwich; 15.9.25. R. J. Bone, C.B.E., D.S.O., to Aircraft Depot, India, pending taking over command; 16.9.25. R. H. Verney, O.B.E., to H.Q., India, for tech. staff duties; 16.9.25. N. J. Gill, C.B.E., M.C., to H.Q., Iraq, for tech. staff duties; 22.9.25. V. O. Rees, O.B.E., to Aircraft Depot, Iraq, pending taking over command; 22.9.25.

Squadron Leaders: H. Gordon-Dean, A.F.C., to No. 24 Squadron, Kenley; 1.10.25. C. G. Burge, O.B.E., to R.A.F. Depot; 15.9.25. A. J. Currie, to H.Q., Palestine Command; 24.8.25. N. C. Spratt, O.B.E., to Aircraft Depot, Iraq; 22.9.25. C. J. Mackay, M.C., D.F.C., and F. R. Alford, M.C. to H.Q., Iraq; 22.9.25. E. D. Johnson, A.F.C., to No. 55 Sqdn., Iraq; 22.9.25. E. M. Pollard, to No. 6 Armoured Car Coy., Iraq; 22.9.25. A. S. Maskell, to Station Commandant, Basrah; 22.9.25.

Stores Branch

Flight Lieutenants:—G. F. Law, to Supply Services (Petrol Dump), Iraq; 4.9.25. G. Oliver, to R.A.F. Depot, on transfer to Home Estab.; 31.8.25. W. L. Shaw, M.B.E., to Armament & Gunnery Sch., Eastchurch; 19.10.25.



A Trio of Air Conferences

THE Congress of the Fédération Aéronautique Internationale was concluded (the business side), on September 24, at Prague, and several questions regarding world records, &c., were considered and modified. On September 28, the International Aeronautical Congress was opened at Stockholm by the Swedish Foreign Minister. Great Britain, Austria, Denmark, Estonia, Finland, Germany, Norway, Poland, and Switzerland are among the countries represented. The principal questions to be considered comprise maintenance of regular air traffic all the year round; night flying; passenger traffic; postal and transport time-tables; junctions with other air lines and railways, &c. On the same date the seventh Congress dealing with juridical questions concerning aviation was opened at Lyons, some thirty countries being represented.

Polish Long-Distance Flight

COL. RAYSKI, of the Polish Military Air Service, completed last week a 5,000-mile flight from Paris to Warsaw. Piloting a Breguet all-metal biplane, he flew by way of Casablanca, Athens, and Constantinople. He made the last stage between Constantinople and Warsaw in a single flight of 7 hrs.

R.A.F. Flying Accidents

THE Air Ministry regrets to announce the following flying accidents:—As a result of a collision in the air at Filton Aerodrome, Bristol, between two Bristol Fighter machines of the Civil Flying School, Filton, on September 23, Flying Officer George William Thorpe, Reserve of Air Force Officers, the pilot of one of the machines, was killed, and Flying Officer Percival Albert Cox, Reserve of Air Force Officers, the pilot of the other machine, was severely injured and died shortly afterwards.

Resulting from an accident near Folkestone to a Sopwith Snipe of No. 17 Squadron Hawkinge on September 24, Flight-Lieutenant Arthur Wilfred Cuddon-Davis, the pilot and sole occupant of the aircraft, was killed.

As a result of a collision in the air at Elmdon, near Royston, Cambridgeshire, between two Grebe machines of No. 29 Squadron, Duxford, on September 25, Flight-Lieutenant Basil Royston Carter, A.F.C., and No. 402111 Sergeant

L. A. Lavender, to remain at Inland Area Aircraft Depot, Henlow, instead of to Armament & Gunnery Sch., as previously notified. A. W. Smith, to H.Q., Iraq. F. Anderson, to Aircraft Depot, Iraq. T. E. Drowley, to Station Commandant, Basrah.

Accountant Branch

Flying Lieutenants:—R. H. Cleverly, to Inland Water Transport, Iraq; 22.9.25. A. E. Vautier, M.C., to H.Q., Accountant Office, Iraq; 22.9.25.

Flying Officers: F. H. Wakeford, to British Hospital, Iraq; 22.9.25. B. L. Blofeld, to No. 55 Sqdn., Iraq; 22.9.25. W. W. Deane, to No. 8, Sqdn., Iraq; 22.9.25.

Medical Branch

Flight Lieutenants:—W. G. Weston, M.B., to R.A.M. Depot; 31.8.25. E. Brown (Hon. Sqdn. Ldr.), to No. 56 Sqdn., Biggin Hill; 14.9.25. G. H. H. Maxwell, M.B., to No. 4 Flying Training Sch., Egypt; 28.8.25.

Flying Officers: F. W. Wilson, to Aeroplane & Armament Experimental Estab., Martlesham Heath; 19.9.25. H. G. Maguire, to School of Tech. Training (Men), Manston; 18.9.25. A. F. Cook, to Research Lab. & Med. Officers' Sch. of Instruction, on appointment to a Short Service Comm., for short course; 16.9.25.

NAVAL APPOINTMENTS

The following appointments were made by the Admiralty on September 24: **Lieuts. (Flying Officers, R.A.F.).**—R. A. Peyton, to Eagle and for full flying duties with 422 Flight; 18.8.25. S. T. Morgan, to Argus and for flying duties with 423 Flight, amended orders; 5.9.25.

Thomas James McGrath, the pilots of the two aircraft, were killed.

Tokyo-London Flight

AFTER spending several days in Berlin the Japanese airmen, Maj. Abe and Mr. Kawachi—who are nearing the end of their flight, in two Breguet machines, from Tokyo to London—resumed their journey to Strasbourg on September 26. They accomplished the flight from Berlin to Strasbourg, under bad weather conditions, in 5 hrs. 40 mins., and on landing were given a warm welcome by the French civil and military authorities. On September 28 they continued their journey to Paris, leaving Strasbourg at 12.30 p.m., and escorted by a squadron of the 2nd Aviation Regiment, they arrived at Le Bourget at 3.35 p.m. They were received by M. Laurent-Eynac and a large and enthusiastic crowd. After a few days' "rest" in Paris they hope to proceed to London.

Air Mails—Autumn Suspensions

THE Postmaster-General announces the suspension for the winter of the air mail services mentioned below. In the case of the letter air mails, the relative route number, as given on p. 2 of the current Air Mail Leaflet (June, 1925), is shown in each instance, together with the date, in brackets, of the last relative despatch from London:—

Route 2, the direct letter air mail to Switzerland (serving also Italy) and the 6.15 a.m. letter air mail to Paris (October 1).

Route 4B, the Königsberg-Helsingfors service (September 29), but the morning air mail from London to Berlin (Route 4A) will continue to give advantage, on days of regular flight, for letters to Memel, Lithuania, Lettonia, and Estonia, posted after the night mail despatch from London of the previous evening; and both this air mail (Route 4A) and the 6 p.m. air mail from London via Rotterdam to Copenhagen (Route 6) can continue for the present to be used for letters to Finland.

Route 5, the 6.15 a.m. letter air mails to Hamburg, Copenhagen (for Denmark and Norway) and Malmö (for Sweden), (October 3), but Route 6 will remain available, for the present, for letters to the destinations and countries referred to.

Route 7B, the 6.15 a.m. letter air mail to Morocco and Western Algeria (October 1).

The air parcel service to Switzerland will be suspended for the winter after the morning despatch from London of October 1.



WHERE METAL AIRSCREWS ARE MADE : The new works of Metal Propellers, Ltd., at Purley Way, Croydon, where the Leitner-Watts all-metal airscrews are produced.

METAL PROPELLERS, LTD.

WHILST in the neighbourhood of Croydon the other day we took the opportunity of paying an informal visit to the new works of Metal Airscrews, Ltd., located at Purley Way, Croydon—just on the "other side" of Croydon Aerodrome. Metal Propellers, Ltd., it should be mentioned, was formed just recently and has taken over the original company, known as the Metal Airscrew Syndicate and associated with the names of H. Leitner and Dr. H. C. Watts, which was responsible for the successful development—entailing years of experiment and research—of the well-known Leitner-Watts all-metal airscrews.

It is not our intention here to give a detailed description of the metal airscrew produced by this firm, for this has been done in a previous issue of *FLIGHT*, as far as the earlier model is concerned, and the main principle of construction is much the same in the latest models. Very shortly, however, we hope to have something further to say in regard to the latest developments of these airscrews and also about the new works. It is to the latter that we wish this week to make brief reference.

Moving into new works always entails considerable difficulty, effort and time, but Metal Propellers, Ltd., have certainly made wonderful progress during the last few months as regards "settling down." Of course, at the time of our visit, the works were not quite completed, but we were able to get a very good idea as to the general character this plant will take when finished. Except for "raw material" and the production outside of the forgings for the propeller bosses, the Croydon works are—or will be very shortly—absolutely self-contained, enabling the complete airscrew to be made "on the premises" from start to finish. This, of course, is a very important feature from a production and supply point of view.

The works include really fine up-to-date machinery, welding plant, an excellent drawing office, and well-equipped technical research department and laboratory—however, we will give our readers a more detailed account of these works as a whole on a future occasion.

Before concluding, however, it may be of interest to note that Metal Propellers, Ltd., have been experimenting for some time with the variable pitch airscrew, and we understand that they have now developed a design for this very desirable type of airscrew which gives promise of leading to the solution of this problem that has, up to now, met with but medium success. The Air Ministry has examined a working model of this variable pitch airscrew and an order for experimental types has, we believe, already been placed. For obvious reasons we are unable to give details of this new airscrew, but we may say that it is simplicity itself, it is entirely automatic—no hand control being employed—and that its principle is based on the resultant of the thrust and centrifugal force, which acts on the blades and adjusts them to the most efficient angle for any particular variation of engine r.p.m., power, etc. But, more of this anon.

Finally, it is indeed very gratifying to learn that Metal Propellers, Ltd., have just recently received a large order from the British Air Ministry. This order is for 1,000 Leitner-Watts metal blades, of which a few are to be constructed of duralumin.

SIDE WIND

It is not only at home that "Titanine" dope makes good, for we learn that the Marquis de Pinedo's Savoia S.16 ter flying boat—which has just arrived in Tokyo from Rome—was coated with "Titanine Two" dope and aluminium nitro varnish. The three Gloucester-Schneider Cup 'buses are, by the way, also doped with "Titanine" (Special Racing Scheme).

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PUBLICATIONS RECEIVED

Der Deutsche Rundflug, 1925. Aero-Club von Deutschland, Blumeshof 17, Berlin, W.35.

Performances of the Hispano-Suiza Engine. Société Française Hispano-Suiza, Rue du Capitaine Guynemer, Bois-Colombes (Seine), France.

The Principles of Sound Signalling. By Morris D. Hart and W. Whateley Smith. Constable and Co., Ltd., 10-12, Orange Street, London, W.C.2. Price 12s. 6d. net.

The Elements of Internal-Combustion Engineering. By Telford Petrie. Longmans, Green and Co., 39, Paternoster Row, London, E.C. 4. Price 10s. 6d. net.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924.

Published October 1, 1925.

- 13,489. DAIMLER-MOTOREN-GEZ. Axles for aircraft undercarriages. (217,216.)
- 13,693. A. ROHRBACH. Connections for wings. (218,263.)
- 14,182. AIRSHIP GUARANTEE CO., LTD. and B. N. WALLIS. Controlling and steering means for airships. (239,300.)
- 17,098. J. BOWIE. Aerial propellers. (239,323.)

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